Madras Information

Published every month by the Director of Information and Publicity
Fort St. George

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GETTING WELL!

Wasted body-cells have to be built up after an illness or an operation. But the very food-elements without which the body cannot turn the rest of its food into tissues are largely missing from the foodstuffs in the market to-day.

Therefore a convalescent needs extra Vitamins in order to put on weight again. It's important, too, to have the natural defence against sepsis after an operation or infections like pneumonia, which only Vitamin A can give.

Just a few drops of Adamin with every meal makes sure of a complete supply of Vitamins A & D. Adamin cannot affect the most delicate digestion and you can hardly taste it in milk or fruit juice.

Adamin

fresh concentrate of Shark Liver Oil

VITAMIN A: promotes growth and rebuilding; prevents colds, measles, chicken-pox, mumps, etc. and infections from cuts and scratches.

VITAMIN D: prevents rickets and is essential to the growth and maintenance of solid bones and sound teeth.

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SISTA'S-GO-4.

E[illegible]uing Elections—Polling Arrangeme[illegible]

Points for Candidates and Voters

By Sri S. VENKATESWARAN, I.C.S., Chief Electoral Officer, Madras.

Members of the Armed forces, certain high dignitaries like former Governor-Generals, President, Union Ministers, the Speaker and Deputy Speaker f Parliament specified by the President under sub-section (4) of Section 20 of the Representation of the People Act, 1950; persons employed under the Central Government in posts outside India, the wives cf persons falling under any of these three categories, and persons under preventive detention, can only vote by postal ballot, and if the postal ballot papers returned by these voters reach the Returning Officer in time, that is, before 5 p.m. on the day prior to the counting day fixed in this behalf by the Returning Officer, they will be scrutinised and taken into account at the counting. Persons including polling agents but not candidates or their election agents who are on polling duty at polling stations other than those where they are entitled to vote can vote by postal ballot if they have applied at least seven days before the date of the poll, and obtained the permissi[illegible] of the Returning Officer concerned. Every [illegible] must be attested by an officer as [illegible]nd must be returned to the Returning [illegible]st or messenger.

Electoral Rolls

Before I [illegible]describe our polling arrangements in detail, it will be useful if I indicate briefly how our electoral rolls for the State Assembly and House of the People have been prepared. There is a distinct, self-contained part of the roll for each small village and for each block or ward of large village and towns. Each voter's [illegible] found in the part relating to the local area w[illegible] resided or had otherwise the residential qual[illegible] the qualifying period. There is a separa[illegible] electoral roll for each voter, with seven ent[illegible] entry is the voter's serial number; the sec[illegible] house number; the third the voter's nam[illegible] the name of the voter's husband, if she is a m[illegible] whether the husband is alive or not, or th[illegible] voter's father or karnavan, in other cases; [illegible] will specify the voter's sex; the sixth ent[illegible] caste or tribe, as the case may be; whil[illegible] entry gives the voter's age as recorded at t[illegible] enumeration.

Polling Time

In his own interest, each candidate shoul[illegible] his supporters to come to the booth early a[illegible] *polling hours for the forthcoming elections will b[illegible] to 12 noon and 1 p.m. to 5 p.m.* In order to fa[illegible] voting, the candidate should give each vo[illegible] promised or seems likely to support him, a [illegible] slip of paper with just two figures recorded [illegible] 2-205—to indicate that the voter's serial n[illegible] in the second unit of local area attached t[illegible] As each booth will have very few units at[illegible] the candidates and their agents will have no [illegible] entering these figures. These number slips [illegible] the Assistant Presiding Officer to locate qui[illegible]

Aid to Voters

In his "Guide for Candidates", the Chief Electoral Office[illegible] Madras, has suggested that each can[illegible] should, in his own interest and in order to facilitate quick polling, arrange to give each voter, wh[illegible] promised or is likely to support him, a small plain slip of [illegible]er giving particulars regarding his [illegible] of residence and serial number in the electoral roll where [illegible] has been registered as a voter. [illegible] since been decided that all the particulars suggested in the [illegible] necessary and that th[illegible] should contain only two figures as follows: "2-205", where [illegible] number of the [illegible] the electoral roll of the local unit where he has been registe[illegible] [illegible]at this [illegible] second of the units the voters in which have been allotted to [illegible] only a very few local units attached to each booth, there will b[illegible] also, the number being determined from the order in which t[illegible] have been arranged in the electoral roll for the co[illegible] above should be entered on these numbe[illegible] polling stations will supply these numb[illegible]

e entries relating to the voter. *Candidates ction in two-member constituencies should l their supporters that two ballot papers will and they should put them into two different ccording to their choice of candidates, and put both the ballot papers into the same box.*

Challenged Votes

aims to be a particular voter which, in fact, y candidate or his election agent or polling allenge him, that is, he must declare and fore the Assistant Presiding Officer to prove on is not the voter he claims to be. But the siding Officer will take no action in respect nge, unless a sum of Rs. 10 is deposited with on the spot for each challenge. If the deposi Presiding Officer or the Assistant Presidin ask the voter to produce evidence of hi d also make a summary enquiry with th the village officer or official of the local bod een deputed to assist him in identifying th e Assistant Presiding Officer may also put uestions to the voter—he can easily do so with the entries in the electoral roll relating to other ling in or near the place of residence claimed r—to satisfy himself as to the voter's identity. h inquiry, the Presiding officer or the Assistant Officer who conducts it, is not satisfied as to the paper f the voter, he will refuse to supply any ballot paper or papers to him and he will be asked to leave the booth, apart from any action, that may be taken after the polling day to prosecute him for committing the offence of personation. If, on the other hand, the Presiding Officer or the Assistant Presiding Officer is satisfied that the challenge is not correct, the voter will be given his ballot paper or papers and allowed to vote in the normal way. In such a case, the Presiding Officer should also consider whether the challenge made was frivolous and was not made in good faith, and if he has come to that conclusion, he must direct the deposit of Rs. 10 to be forfeited to the Government and his order in this respect will be final. Even in cases where no forfeiture is thus the deposit will not be returned until after the f the poll.

Tendered Vote

also important that candidates should note that, though the election in an Assembly constituency and corresponding Parliamentary constituency are ...sly in the same booth, they are in fact two ...ions. This is why there ... rate ...ents, separate ... arate But the ide... er and to chal... votes given com- in the vote

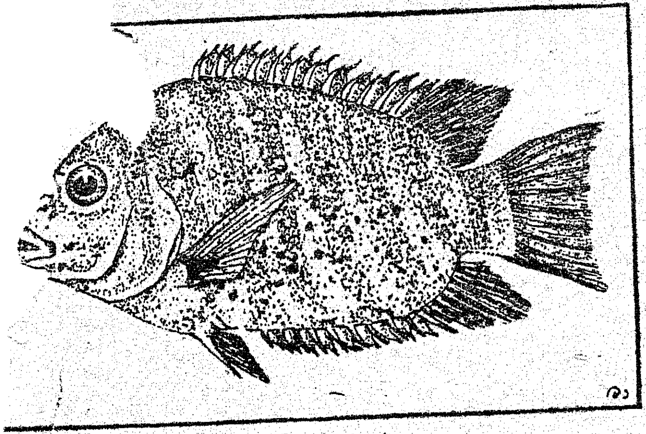
into the voting compartment, first into the Assembly voting compartment and then into the Parliamentary voting compartment and there the Presiding Officer or Assistant Presiding Officer will ask him confidentially as to the candidate or candidates for whom he desires to vote, and will himself record the voter's choice on a special form called the tendered ballot paper which will be kept in a separate packet and not counted at all. But a challenge should be treated as a challenge only for the particular constituency where the challenging candidate is standing for election. If a candidate belonging to the other constituency wants to challenge the same voter, he must challenge again formally and deposit Rs. 10 for it.

Polling Arrangements

I shall now proceed to explain in detail our polling arrangements as they affect our voters. One of the provisions in our Election Law is that a voter can vote only at the place and in the manner prescribed under that Law. Hence the need for polling stations and booths. As a rule there will be separate booths for men and women voters and all the polling staff in booths set apart for gosha ladies will be women. We have provided for separate entrances and exits for each polling booth, so that there may be no room for any confusion. At the entrance to each polling station, there will be an official Guide wearing an armlet with the words "Official Guide" w... regional language or languages. Near ... exhibited two large posters, separately ... and Parliamentary constituency, one ... pa... culars of voters allotted to each booth ...tion, an... the other showing the names of the ...s in the same order as in the final list of candidates notified by the Returning Officer, together with a description of the symbols allotted to them and samples of those symbols.

Method of voting by the Blind

A question has been raised as to the method of voting by the blind. In the case of voters who are blind, the procedure laid down in Rule 26 of the Representation of the People (Conduct of Elections and Election Petitions) Rules, 1951 will be strictly followed. The procedure is that, if owing to blindness or other infirmity, an elector is unable to read the symbol on the ballot box or is physically incapable of putting the ballot paper into the ballot box, the Presiding Officer or the Assistant Presiding Officer, will take the voter into the voting compartment, ascertain from him the candidate or candidates for whom he desires to vote, and put the ballot paper or papers in the ballot box or boxes accordingly. The officer will treat as an official secret the voters' choice of candidates, and will keep a brief record of each such instance without indicating the manner in which the votes have been cast. The voter's companion may enter the bo... o up to where the Assistant Presiding Off... but cannot acco... the voter int...



Etroplus suratensis.

Mullets need careful handling, in capture, conditioning, ...ion and transport, lest with their extr... to changed conditions, mortality mo... ...eme are conditioned for two days by ... ...ants high. ...ditioning boxes and later slowly ... keeping them in water by gradually reducing th... acclimatised to fresh- y adding small quanti... the salinity of the canal water ...egular interv... ...ies of fresh-water to the contai... ...as till the whole salt-water is chan... ...et water. This laborious process can be dispe... ...her Woollapaliem. On account of the natural ...ged to ...sh and salt waters and the natural acclim... ...nded with mullets in their voluntary ascent, la... mixing up of ...pensive collection and transpla... ...tisation of the ...easible (a separate note on this proc... scale yet inex- ...y the author in "*Curr. Science*," Ap... are rendered ...as been published ...1947-16, 123-124.)

Thummalapenta—six miles from Kavali Railway Station and Woollapaliem (five miles from Singarayakonda ...ailway Station) on the Vijayavada-Madras main line are ...y collecting centres.

...*ps cyprinoides* (*Bronussonet*) (*Telugu* "*Kanangi*") ...napatam, 16 miles by bus from Nellore Railway ...and Thummalapenta, six miles by road from Kavali ...y Station, are two centres noted for this breed. ... important estuarine fish, acclimatisable to fresh- ... With a growth of 2 feet weighing 4 lb., the fish is ...mically important. The large eyes and steel blue ... roughly distinguish the fish. It is predaceous and ...regated culture is a profitable proposition for private ...rs and State managed fish-farms. Its young ones are ...able at Krishnapatam back waters between May to ... By cast and hand-shore-seine nets plenty of ...lops *Cyprinoides* fingerlings are landed by local ...rmen. Like mullets they need slow acclimatisation ...ful conditioning. Besides being a tasty fish, the ...s a notable cyclopcide. So its culture and distri- ...or dual purposes figure as a prominent item in the ...ental programme of the Circars. This is popularly ... Ox-eye herring. It is well-known food and game ...ng in coastal inundations in Nellore district. ...e are much compressed, transparent and cellike. ...ge, the larvae are called laptocephali. It is ...ceous and when the young ones were starved ...oning box for more than a day, they were seen ... mutilating one another. H... ...riod ...ould be taken into acco... ...ssened to the utmo...

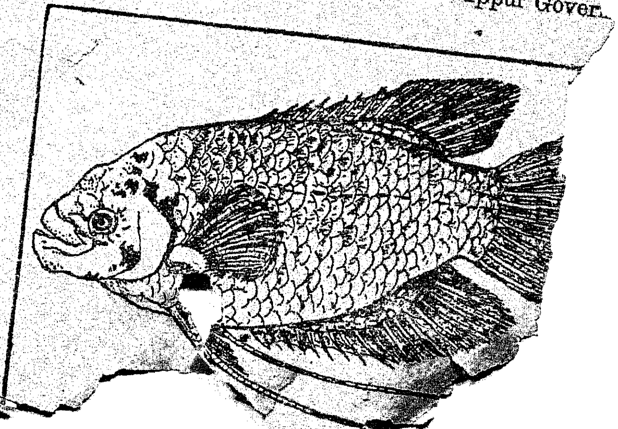
species is particular... swampy waters and an...

Lates calcarifer (*Telugu*— ...tam, Thummalapenta, Woo... important breeding centres of ... known in Telugu parts as "... highly priced for the flavour a... weighing round 4 lb., easily fet... mufassal market. The fish rea... waters. It is seen, to voluntari... into irrigational water ways. T... fingerlings measuring upto 3", 8 ... At Krishnapatam, Thummal... Kakinada fingerlings are ... December to April at the ... to December ... Governm... 3 f... ...n the ...ent fish-f... ...eet weighin... carps such ... *ticto* and ... per... se... ...n. It is ...gregated cultu...

The fry and finger... in abundance but are ... then. Due to limited av... nature this fish does not occu... cultural operations in Circars an... when the creeks adjoining fish-far... tanks yield a few hundreds of *Lates ca...* they are collected and transplanted witho... penditure. In the fish-farm at Ippur in N... *Lates calcarifer* throve best in slightly brackish wa... is well known, it never breeds in fresh water.

Chanos Chanos (*Forsk*) (*Telugu*—" Th... Krishnapatam, Thummalapenta and Woollapaliem places were Thulu is available in plenty.

It is available in the abovementioned regio... January to February and sometimes even up to The hand-shore-seines, and cast-nets are the im... commonly employed to collect them from th... The long-body, with deeply forked "tail" make... cation easy even for an illiterate fisherman. ... welcome addition to the inland fisheries of Circar needs careful conditioning and transport. Fi... collected at Krishnapatam and taken to Ippur Gover...



seven miles on metal ties. It was found that ...ngs more than any other ... in mud pots on slings is ... *Chanos* grows faster in ... food 3 inches *Chanos* intro... " at Nellore were recaptured inches and weigh 6 lb. This ...n observed in Ippur fish-farm.

...ularly called as the Milk-fish. In ... abundant in the creeks of Pamban. ...an be easily acclimatised. Its ... It is reported that in a year it ...es in one instance. *Chanos* ... Rameswaram area. Thus ... *Catla* for inland ... combination ... listic ... than ... ideal co... uncanniba... of *Chanos*, ... in a tank ... kton- ... d. ... are plan... struggle for foo... ...feeders with weed-

... " *Duvana Chappa* " or

... in high esteem by the fish-eaters. ... that adapts to any changed condition. ...its deep body and strong dorsal spines it ...emies and lives comfortably in any piece of ... its favourite diet *spirogyra* is made available.

... *suratensis* breeds during November-February ... youngs are seen often to move in thick shoals. ...lection is possible with a hand-drag-net of fine mesh. ...sh are very elusive and bury themselves into mud ... rocks on the slightest disturbance. The fisher... ...itwit the fish by carefully feeling for them below ...s and in the mud. They pick them up precisely. ...ning is usually between 2-3 days according to ...sh of 1"-2" stand transit well. With replenishing ... at every 100th mile consignments travelled ... heavy mortality from Madras to Kaikalur and ...la in Krishna district (distance nearly 300 miles).

... Government fish-farm at Ippur gives an annual crop ...arly 1,000 *Etroplus* fry for propagation in Nellore ...t.

...brackish water perch commonly called the Pearlspot ...dant in the estuaries and creeks within tidal in... ... It can be easily acclimatised to fresh water, the ...thod being half-a-day's stay in each of the grades, ½ and ¾ fresh water and finally change it to completely ...ter. It is the *only* fish that not only adapts itself ...pletely fresh water and brackish water but also ...n all kinds of water. In the case of all other inland ...hey either do not live in certain kinds of water or ... manage to live, they never bre... In either case ... the serious handicap to p... ...anently establish ...ies in inland waters, whe... eas in the case of ...nsis it grows anywhere on the plains and ... and establishes its... ...ently in the ... Hence it ... ...rtance in

thrive. Further, due to its hardihood, ... nature, and easy adaptability to any ... *Etroplus* is claimed to be the best fish for i...

Exotic Species

Osphronemus goramy (*Lacepede*) (*Telugu* " Gor... This forms an important fishery in the Circars. S... introduction from Java it has been engaging the atte... of several workers. It has been well-tried in small po... deep pools, reservoirs, rivers and irrigation wells. Re... its culture in small cement cisterns has been demonst... by the writer in the Municipal Park at Rajahmun... Its culture in hill—springs and rocky " gundam " demonstrated by the author. This fish is bec... increasingly popular with fish-farmers. Ippur fish... and small nursery set up at Rajahmundry cater t... demands but the bulk of the supply comes from Gov... ment farm at Sunkesula, in Kurnool district.

Gourami is famous throughout the world as the be... fresh water fish for the table. It is a native ... and was first introduced into Madras in 1926. ... size of 24 inc... ...hes, bonelessness, delicious flavou... ease with which it is ... bred and transported render i... best fish for culture in gar... ...den pools and tanks with luxu... ...nt water vegetation. A pond ... with a surface area ... 200 square yards and a depth of three ... feet with lotus ... rie... is the best for gouramg culture. It is mos... water-lil... ...eder and is partial to lotus. Oil-cake ... vegetable fe... little animal food forms a welcome artific... mixed with a... It breaths air directly also from the ... food for this ... transport over long distances very ... atmosphere a... ...ly mature in its third year an... well. It bec... ...ually ... a year. breeds genera...

It is not a prolific breeder, 500 being the usual numbe... of eggs at a time. Gourami is noted for its nest-buildi... habit. As the breeding season approaches the p... searches for a suitable spot on the margin of the tank an... builds a nest with blades of grass and other weeds ... fixes it firmly to marginal weeds just 6 inches b... surface of water and deposits the eggs safely ins... nest.

Osphronamus goramy and *Etrophus suratensis* c... stocked together in garden pools or tanks with lux... vegetation. The former feeds on coarse weeds and ... while the latter lives on filamentous algae without ... peting with gourami for food.

Cattle Show at Valparai

A cattle show was held at Valaparai in Coimb... district on December 1, 1951. The Government ... contributed a sum of Rs. 500 towards the expenses o... cattle show. There were about 250 exhibits, whic... ed pure-bred and graded Sindhis. Over sixty pri... given to the best specimens. (*See* third cover ... pictures.)

Adult Literacy Centres

One thousand three hundred and ni... additional adult education schools have b... during the last six months by local bodies in the ... areas, bringing the total number of adult s... oper... ...s get grants from Gover...

had made original ...ects by painstaking ...s were highly instruc- ...like. Appreciating the ...e Sri M. Bhaktavasalam, ... presided over one of the lectures may be made a ...e Museum activities. The ...ere: Dr. N. K. Panikkar, ...Marine Fisheries Research ...Research and Museum"; of Indian History, Benares ...th Indian Painting"; Sri T. N. ...endent, Department of Archaeo- ...Calcutta—"Museums of United ...Sri G. Venkatachalam, Art Critic ...sand years of Indian Painting"; ... Ayyar, Principal, Stanley Medical ...of the pedigree of Man"; Dr. T. S. ...boratory, University of Madras, ...orne diseases of crop plants" and "Indian Sculpture and Culture".

...m Exhibits

The largest and probably ...able of the exhibits in the ...antic skeleton of the Great ...*ptera indica*) suspended from ...the Hall of general exhibits at ...oological galleries. The whale ... was prepared was a fair-sized ...ver 60 feet in length and was washed ...ore in 1874.

...er notable skeleton exhibits in the Museum; ...ns of the Indian elephant and their skulls ... ivory attract much attention.

...Museum is primarily devoted to specimens ...fauna, it can still boast of a small compli- ... from foreign countries. Among these, ...Tapir, Cassowary and the Kangaroo are ...tstanding ones. A large male specimen ... Anthropoid Ape, the Orang-Utan, ...visitor as he enters the general gallery ...of a whale is exhibited.

...e earliest notable collection of this ...ected by J. W. Breeks and others and ... Foote, the pioneer pre-historian of ...s exotic-looking specimens of tiered ...imal and human figurines (with the ...ornaments of iron, bronze and even ... of agate and etched beads of carne-...

...g collection of Stone Age and Iron ... was also collected by R. B. Foote. ...e in being the only pioneer collection ...ties of this country. Its value is ...being highly representative of the ...ultures of India.

... collection includes antiquities ...earlier of excavations conducted ...Archaeological Survey of India. ...rial site at Adichanallur in

Numismatic collections.—The earliest Indian ... represented in the Museum Cabinet is the *Parana* or ... Punch-marked coin as it is called in English. The term punch-marked is used to distinguish it from the "die struck" coin. A die covers the whole or a very large part of the face of a coin, but a punch covers only a small portion of its surface. These punch-marked coins have been classified as pre-Mauryan, Mauryan and Post-Mauryan. The silver punch-marked coins generally weigh 56 grains.

Of South Indian coins, the Museum has the coins of Cheras, the Pandyas, the Cholas; the Western and Eastern Chalukyas, the Rashtrakutas, the Kakatiyas, the Yadavas, the Hoysalas and of more recent time of Vijayanagar and Mysore Kings.

The Museum also has a very fine collection of Mughal, gold, silver and copper coins.

A very rare find was recently acquired from Dowlaishwaram, a place very near Rajahmundry. The find consisted of 127 gold coins, 49 of which belong to the Eastern Chalukyan ruler, Rajah Rajah I, and the rest to his son Kulothunga Chola.

Archaelogy and Art.—The art connoisseur has a variegated feast before his eyes when he enters this Section. The collections of the section may be grouped as follows, each group being important and interesting in its own way:—1. Bronze figures, 2. Specimens of sculpture and architectural pieces, 3. Paintings, 4. Inscriptions and 5. Handicrafts and works of art.

By far the best known objects of the Section are the metal figures. There are over 800 of them in the Museum of which about 85 are Buddhist, about a dozen Jain and the rest Hindu. This Museum is perhaps the only institution in the whole world where such a large collection of metal figures is assembled under a single roof.

The collection of early Buddhist sculptures includes the large group of sculptures from a ruined stupa at Amaravathi, a few fragments of sculpture from Jaggayyapeta, a few sculptured friezes belonging to a stupa at Goli. The total number of these sculptures is about 300. The Amaravathi sculptures are of interest as they are in at least four distinctive styles showing the development of the art in South India.

There are about 300 paintings in the Section. A good number of them are in the Tanjore style, characterised by delicate brush work and realistic touches.

Botany and Geology.—Topics in the Botany galleries of the Museum fall under (*a*) Systematic Botany, (*b*) Economic Botany, (*c*) Ecological Botany, and (*d*) Miscellaneous collections (meaning other branches of the subject, that are not covered by the preceding three heads).

The public galleries of the Geology section are devoted to (*a*) General Geology, (*b*) Stratigraphy, (*c*) Minerals, (*d*) Rocks, (*e*) Economic Geology, (*f*) Special isolated collections and (*g*) Index collections. Under General Geology are illustrated the structural details and the surface architecture of the earth. The photograph of the earth from 100 miles up, the plaster model showing the internal structure of the earth, and the contour model of the Madras and Chingleput district... ...people.

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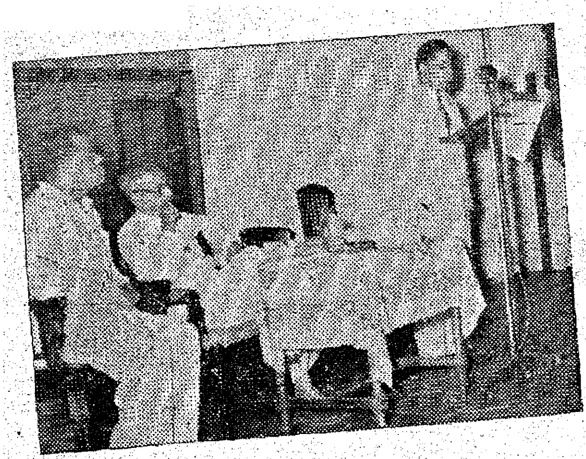
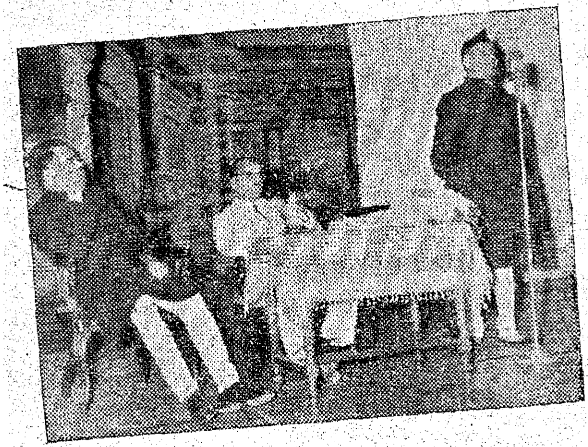
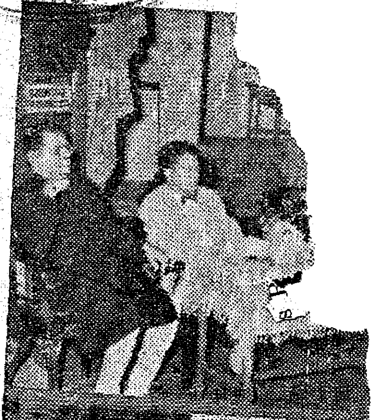
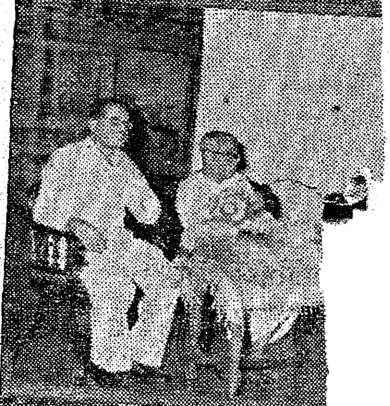
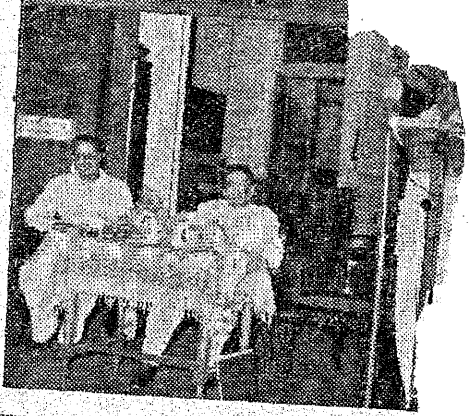
MADRAS

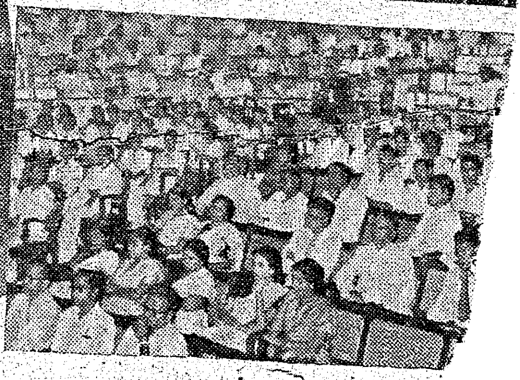












*A series of interesting lectures were arranged in connection with the Madras Museum Centenary celebra-
N. K. Panikkar speaking on "Fisheries Research and Museum"; (Top Right) Sri T. N. Ramachandr-
... and India"; (Centre Left) Sri G. Venkatachalam, speaking on "Two thousand years of
...owd. ...ts of Soil borne diseases of Crop plants"; (Bottom Left) Dr.
...ian Sculpture...*

Art Gallery for Tanjore

A chance quest for a discarded idol has led to Tanjore, the spiritual home of South Indian fine arts, acquiring an art gallery of its own. Art lovers from all over the world have endlessly streamed into Tanjore to study the majestic splendour of the temple and palace architecture, gaze at the frozen music of the sculptural bounty, applaud the form...sed appeal of the Bharata Natya artistes, or thrill to the word-forms and sound-pictures built scale by scale into geometric patterns by master musicians.

Yet this bounding plenty of art wealth till recently was ...n lavish prodigality all over the countryside, making ...ct presentation of representative art forms in the ...a wellnigh impossible task.

...nce request led to the welcome correction of this ...t. When a demand was made by a connoisseur from Calcutta for the acquisition of an image of ..., left neglected on the banks of the Vadavar at ...nattangudi, Tanjore woke up to the need for an art ...

... characteristic speed and thoroughness, arrange... were made for the establishment of an art gallery ... Naik Durbar Hall of the Mahratta Palace, the renowned home where till a few generat... art forms were nourished and cheri... institution contains exquisite specimens ... bronze, collected from various parts of T...

A significant note ... warning was struc... Sri P. S. Kuma... ... vatsalam, ... Gallery. The Chi... in recent times in ... architecture, while ... fine arts like dancing ...

Sri M. Bhaktavatsalam referre... in art as practised by the ancients. These ... now attract our attention, he pointed out, in ... decadent stage in which is found specimens o... painting and architecture.

The establishment of the Art Gallery at Ta... well serve to focus the attention of art lovers a... this problem, and aid to foster a revival whic... with pride the glory of the past.

... Forests and Grazing Rights

Concessions Granted

...as been represented that cousequent on the taking ... estate forests by the Forest Department on ... 15, 1951, the cattle which till then resorted to ... forests for grazing have been prohibited from ... into such forests, thereby causing hardship to ...ple concerned. With a view to avoid drastic and ... changes in the administration of these forests, ...ordinates of the Forest Department have been ...ed to observe the following procedure until further ...—

... In all estate forests that have been already ... as reserved land under section 4 of the Madras ...t Act or under Rule 5 of the General Rules framed ... section 26 of the Act, grazing shall be permitted ... manner prevalent at the time of the taking over of ...rests from the managers of estates and subject ... ...yment of the usual fees...

(4) The scale of grazing fees shall v... different estate forests according to custom... and even if they are lower than the departm... there shall be no attempt to enhance the rates ...

(5) In the major forests referred to in ... above, goat browsing s...ll be prohibited altoge... the forests in item (2) ...re it has been the pr... allow goats to browse, ... browsing shall be disc... in the interest of f... ...servancy but not pr... and the villagers co...cer... ...hall be given due notice ... goats are liable to be ...ibited from April 1, 195... In the class of forests ...red by item (3) above, ... restriction on goat brows... ...all be enforced at presen...

2. In the matter of rem... ...of forest produce such ... green leaf manure, thor... ... other fencing mat... dead fuel and small tim... ...quired for dome... ... agricultural purposes fre... ...on payment of fees ... practice in force at the tim... ...transfer of forests ... ...until further orders.

...dents

...ck of Foodgrains that Non-producers can Possess

...e Madras Essential Articles Restricted Acquisition Order, 1947, as amended, the non-pr...cers ...and stock for personal consumption, foodgrains up to one month's requirements in the ra...ned the surplus taluks of surplus districts and up to six months requirements in the derationed ...s, ...he upla... taluks in the districts of East Godavari, West Godavari, Krishna, ...f 12 oz. per adult per day. Under the Madras Foodgrains Control ...r, ...is required for the stocking of foodgrains by any one in quantities ...purpo... other than those of sale. The Government have therefore ordered ...e to stock foodgrains in quantities exceeding 15 imperial maunds under the ...ssential Articles Restricted Acquisition Order, 1947, they should be given ...they should be exempted from the payment of the prescribed licence fee

...ducers whose one month's or six months' requirements of foodgrains, as the case may be, exce... ...erial maunds should, therefore, take out within one month from the date of publication of this Pre... (7th December 1951) an exemption certificate under the third proviso to clause 3 (1) of the Madras Foo... Control Order, 1947, from the Commercial Tax Officer having jurisdiction over the area in whi... ...eside. Such certificates will be issued free of licence fee by the Commercial Tax Officer on appl...

If any non-producer is found in possession of foodgrains in excess of 15 imperial maunds without a... ...tion certificate after the expiry of the period of one month, he is liable to be proceeded against und... ...ras Foodgrains Control Order.

Procurement Price of Paddy Increased

...adras Government after careful consideration ...of production, the ...e levels of essential ...ities other than rice a... the interests of con... ...have increased with the approval of the ...overnment of India, the pr...ement prices of paddy ...n the districts of East Godava... West Godavari, Krishna, ...untur, Nellore, Tanjore, Mal... and the Nilgiris, where ...e intensive procurement sc...e is in force by As. 8 ...r imperial maund with eff... from December 2, 1951. ...e increase in procurement ...es will be passed on to ...mers by suitably revis... the f.o.r., ex-mill, whole... ...tail prices.

The prices in the four... ...strial towns of Madras, ...Coimbatore and ...isakhapatnam...

increase in the prices paid to the producers for... grains must inevitably result in an increase in th... of labour and cost of other essential commoditie... creating a vicious spiral of increase all roun... nullifying the benefit accrued to producers.

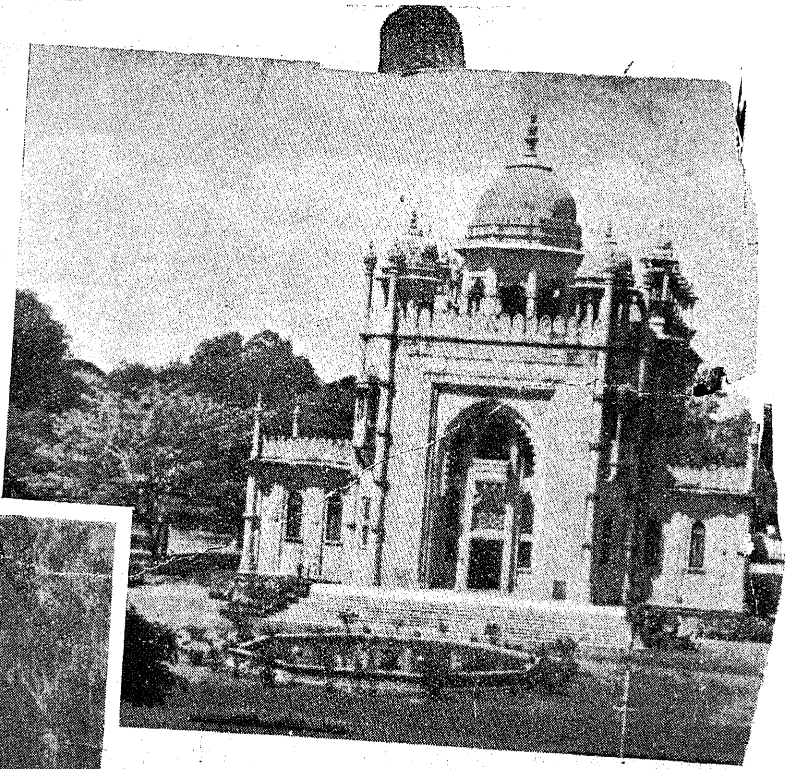
Nevertheless, the Government have respond... the repeated demand for some increase in pr... ment prices in the hope that it will enc... increase of production in the surplus di... which will continue to be the principal s... supply of rice to the deficit districts in th...

The Government desire to appeal to the ...rder... in these districts to increase production by all ... means and to surrender their entire surplu... Government and thus help the Government ... the food scarcity, which, under present in... promises to be as acute next year as in this...

1 CENT

THE NATIONAL ART GALLERY

Sponsored by the Government, the Art Gallery was opened by the Prime Minister, on November 27, 1951.



Victoria Memorial Institute where the National Art is housed.

CONNEMARA PUBLIC LIBRARY
JAN 1952
MADRAS

A portrait study—one of the Mughal Paintings in the Art Gallery.

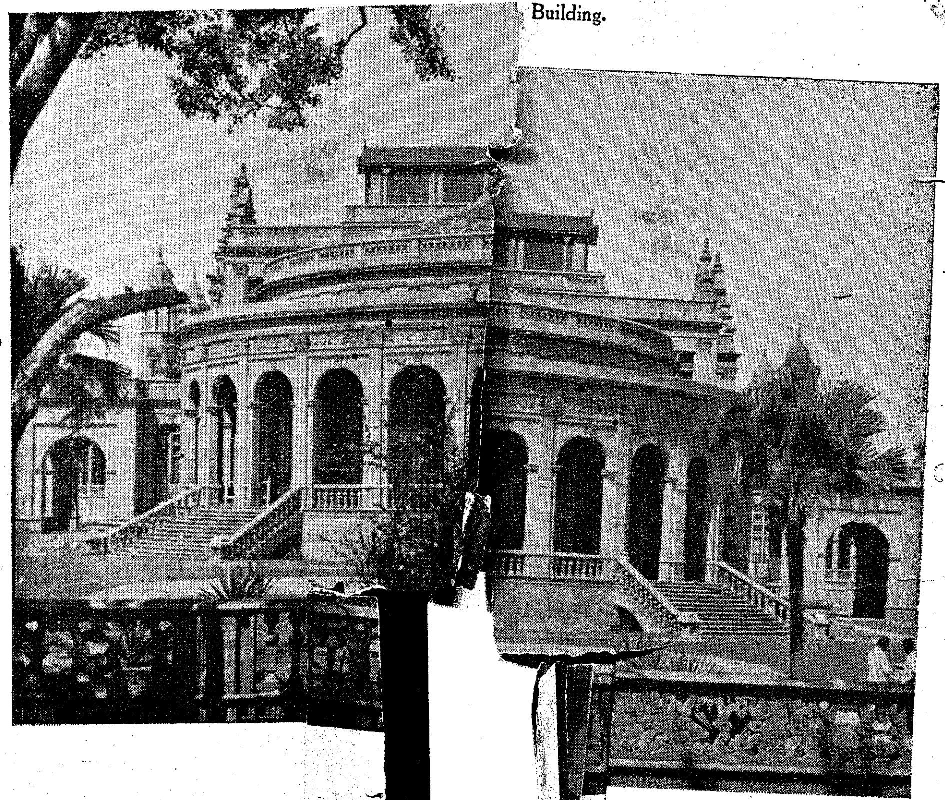
Krishna with Gopis—An old Rajasthani painting kept in th Art Gallery.

THE MADRAS GOVERNMENT MU | CENTENARY CELEBRATION

was inaugurated by Sri Jawaharlal Nehru, the | me Minister of India on November 27,
1951. Starting in 1851, with the collections, m | eological, numbering about 1,100 of the
Madras Literary Society as its nucleus, this | tion had completed 100 years of useful
existence.

LIC LIBRARY JAN 1952 MADRAS

Front view of the | Building.

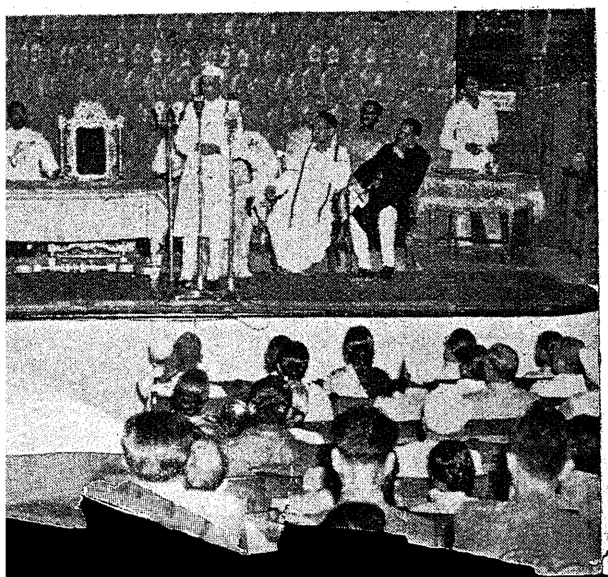


LIC LIBRARY JAN 1952 MADRAS

One of the exhibits in the Archaeological Section.

Officer-in-charge when the Museum
established.

naugurating the Centenary Celebration.



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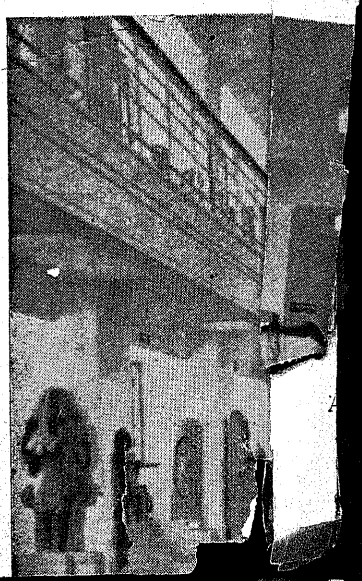

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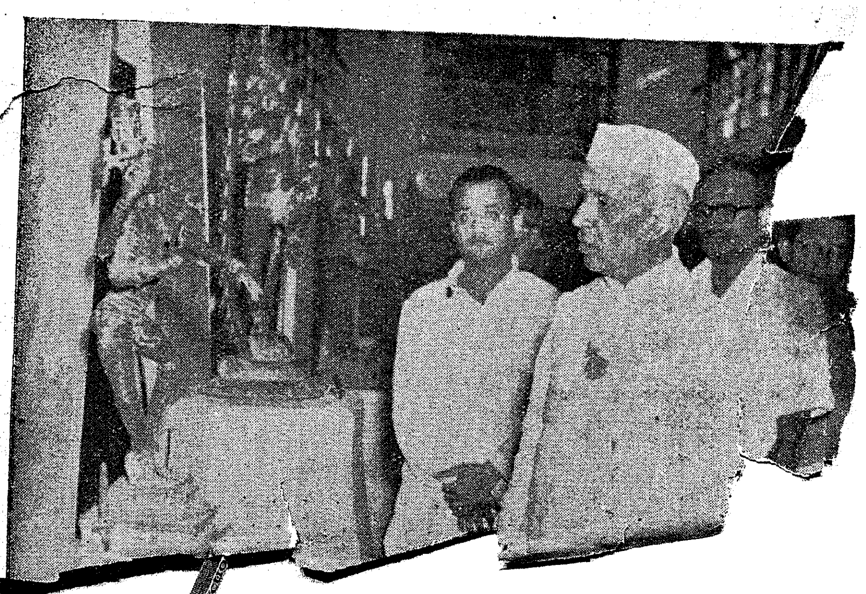
Sri Jawaharlal Nehru studying the exhibits.



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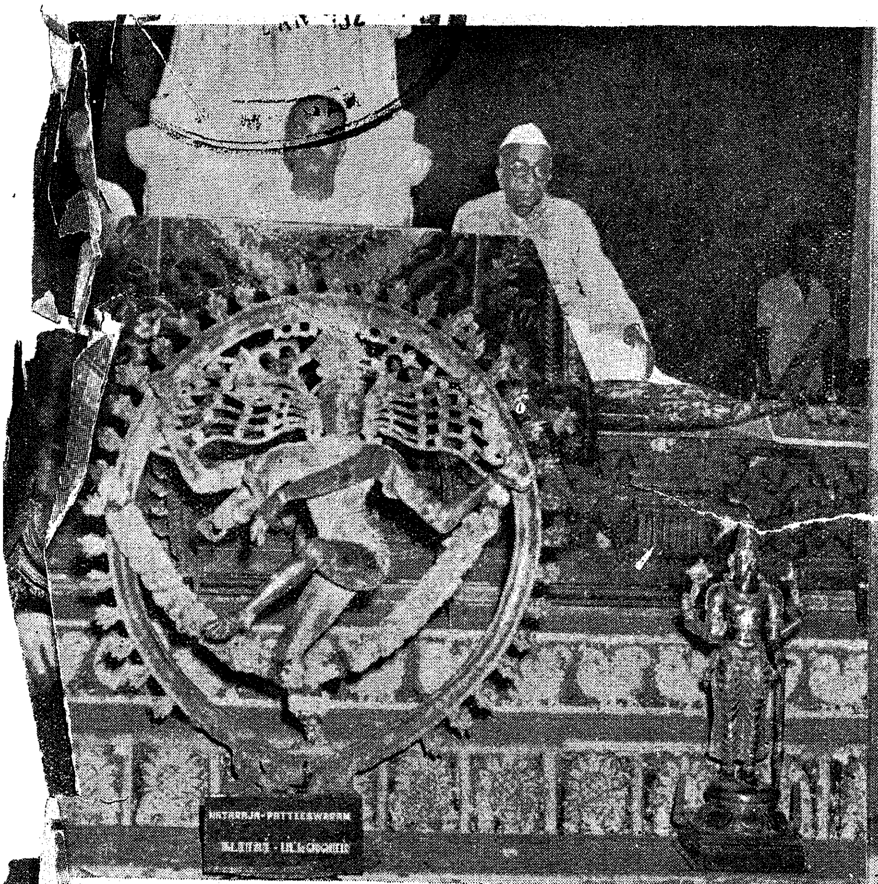
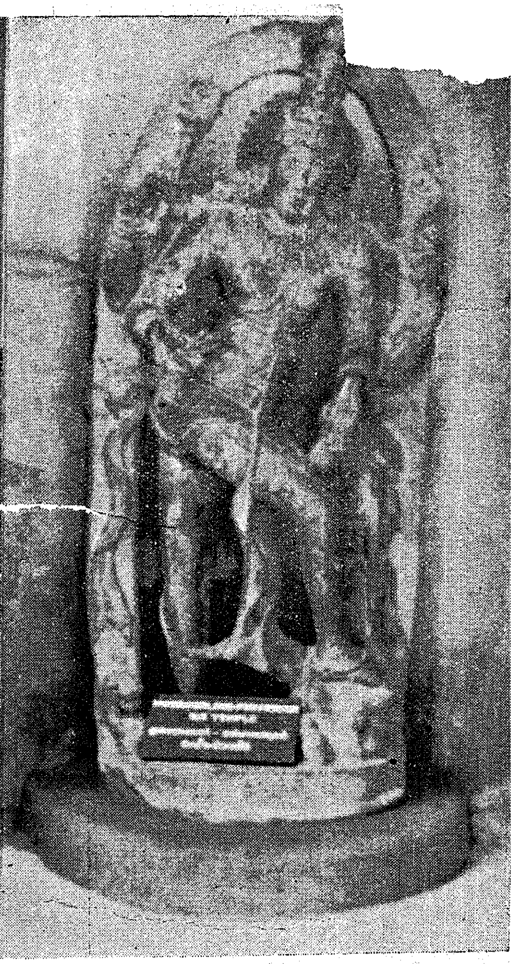
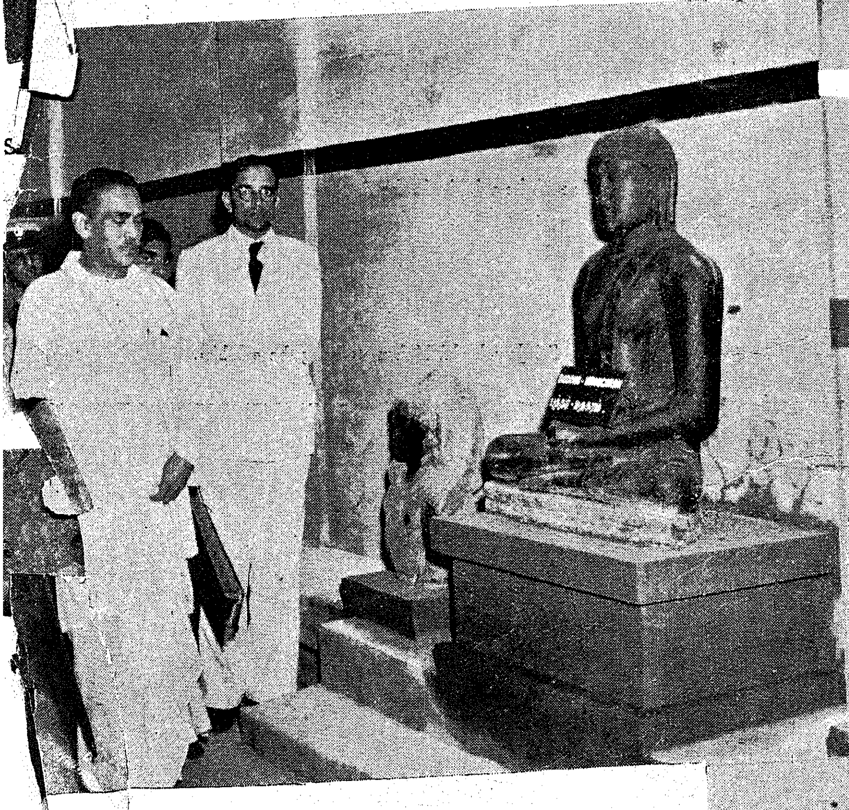
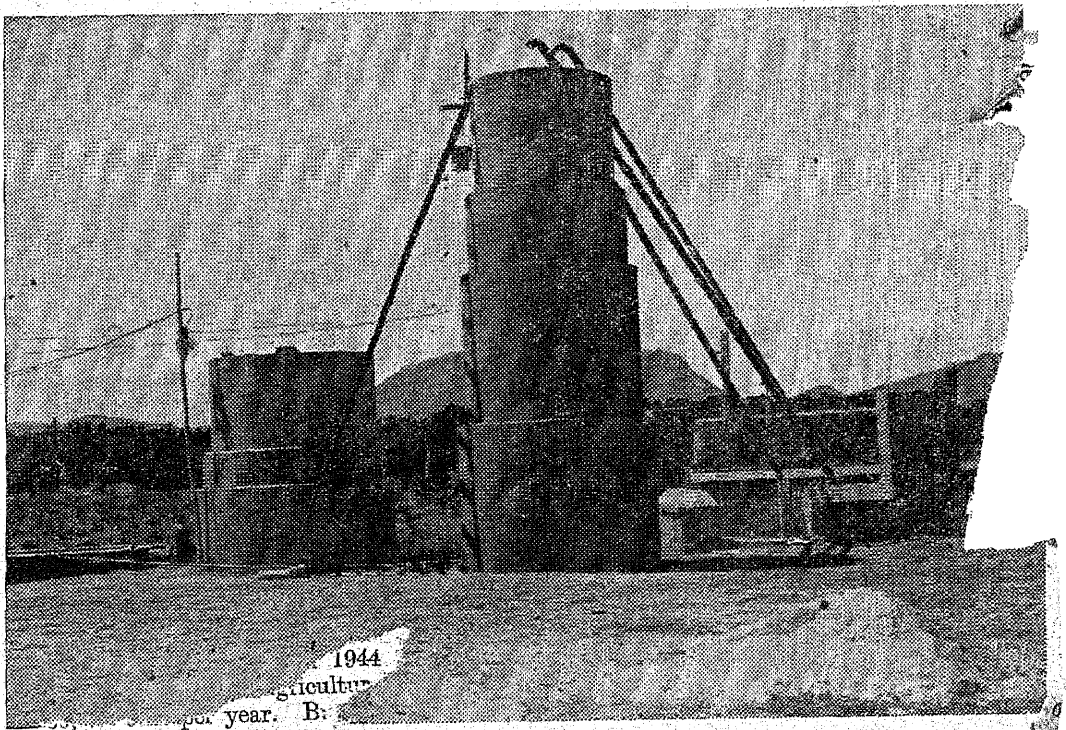






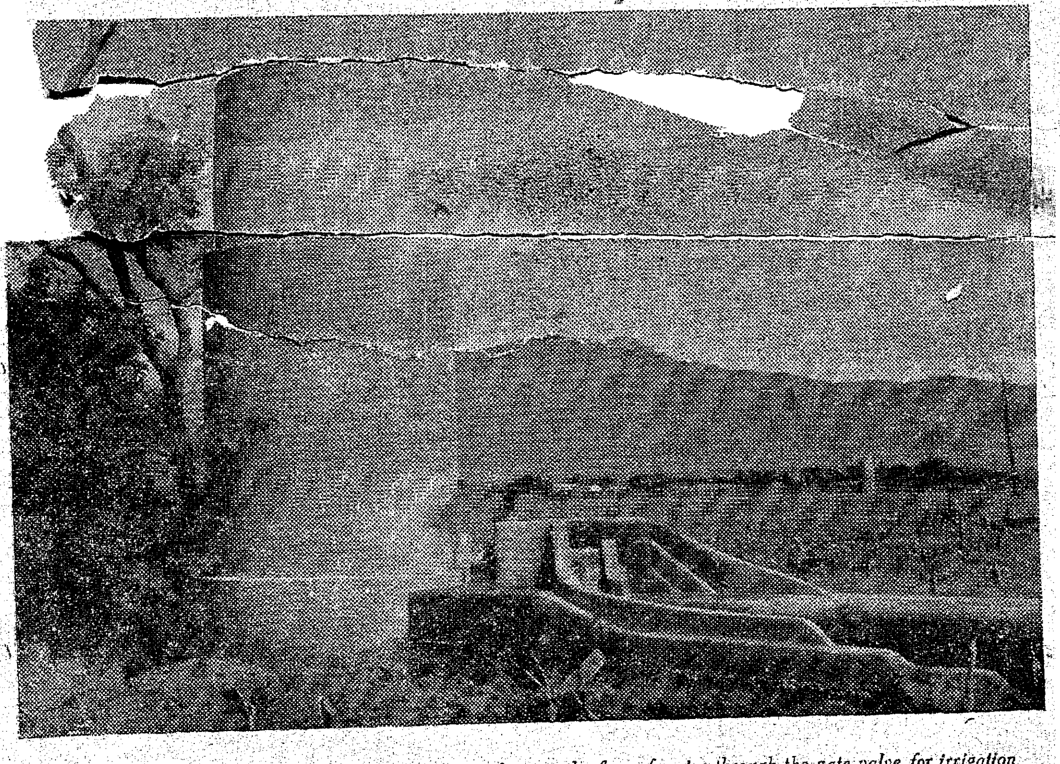
...allery was inaugurated ... 'ble Sri M. Bhakta-
... Sri P. S. Kum... Chief Minister,
...ural...



... 1944
...griculture
... year. B...
Government of India was ...
rements. There has, how...
...allotment of ...
...beg...

...masonry towers showing the gate valve and discharge cistern at Vedapatti Farm.

...and
... Pyk...
...ma...
...n



Another close up view of the masonry water tower showing the flow of water through the gate valve for irrigation of adjoining fields.

Electricity Schemes—Progress of Work

[...ollowing details give us an idea about the activities ...e Government Electricity Department in the ...nth of October 1951.]

...chkund Hydro-Electric Scheme.—Position under land ...sition continued to be the same and lands were yet ...e handed over on the Orissa side. Survey of Jalaput ... submergible area and low saddle portion was com... d. Requisition for submergible lands has been sent ...fadras and Orissa Governments. Metalling was ...leted for the entire Lamtaput-Machkund road. ...uction of 16 bridges and almost all culverts was ...ted. Little work could be done in the Diversion ...ie to floods in the river. Excavation and collection ...rials for masonry were in progress in the Tunnel ...)am. The Flume Tunnel excavation and work construction of three cross drainage structures ...tinued. Entire drilling of the Flume Tunnel was ...d and concrete lining was done for about 50 ...er cent of the Pressure Tunnel.

Construction of temporary buildings at Jalaput and ...ermanent buildings at Onukudelli was progressing. ...evelling winch house-site, penstock grading, levelling for power house were progressing. Total labour force ...uring the month was 4,132.

Moyar Hydro-Electric Scheme.—The civil works for ...eadworks up to Moyar Forebay have been completed. ...otection works along the flume were continued. High ...ssure pipes were continued to be erected. The power-...se building was nearing completion. The first machine ... connected parts were under erection.

...ykara Plant III Stage Extensions.—Construction of ...ara Dam involving excavation for foundation and ...sonry building for main dam and wing walls was progress... Work on construction of portion ... right flank was progressing. Al... ...of the erection of the IV penstock ... were ...at site and about 60 per cent of the pipes were ... position. The foundation for power-house ...sion was completed.

...adurai Thermal Scheme.—Erection of the third boiler ...as completed and steam raised. Erection of minor ...cessories was being attended to.

South Kanara Scheme.—Survey of the lines has been completed and preparation of the valuation schedule was being continued.

Tungabhadra Hydro-Electric Scheme.—Detailed survey for about 50 miles of route of transmission lines was done.

Vijayavada and Visakhapatnam Power House Extension, Vijayavada.—Earth work excavation and rough stone dry packing under flooring of the portion north of Boiler No. 4 were in progress. Plastering the first floor of control gallery was nearing completion.

Tying grills and bending rods completed for coal hopper and further work was in progress.

Visakhapatnam.—The second of the two 15,000 KW turbo set sanctioned under the extension was commissioned satisfactorily. Painting third coat of the iron members of boiler house was nearing completion. Tenders for the extension of south and west side of the power house was yet to be decided.

Ceded Districts Scheme.—Survey for the 33 KV line from Adoni to Yemmiganur has been completed. Survey of the Rayadrug 11/33 KV line was completed. Fifty percent of pole erection was also completed. In Rayadrug distribution, pole erection and stringing of lines were in progress.

Nellore Thermal Scheme.—All works completed except sewage arrangements.

Nandyal and Tadpatri Scheme.—With the commissioning of the diesel sets in Nandyal and Tadpatri in September and October 1951 respectively, the works are coming to a close. Numbering and painting of poles were nearing completion.

Madanapalle Scheme.—The site proposed for constr... tion of Thermal station was taken over by the Depa... ment. Tender for erection of Panagarah shed was ... scrutiny.

Madras Plant Extensions.—Works on main superstructure, office and control block, c... one and two and weighbridge, cooling tow... continued during the month. Works conne... railway coal siding, evaporator plant house were in ... stages of progress. Electrical and Mechanical works as erection of boilers, mechanical coal handling ... piping equipment, etc., were in progress.

Operation Branch

Hydro areas.—The three hydro systems continued to ... in parallel with Madras Electricity system this month. The number of units generated, peak load and se... connected during the month for the three hydro e... ...stems were as shown in the statement ... next page top.

Thermal areas.—Supply conditions in Madra... Andhra systems were satisfactory. Madras Ele... System continued to take relief from Mettur E... System.

The V 1500 KW turbo alternator at Visakhapatnam was commissioned on 26th October 1951. Chodavaram line was energised during the month. Velpu and Tanuku distributions and the 11 KV line from Attili to Tanuku were energised in West Godavari. Atukuru and Telaprolu distributions in the Vijayavada area were energised during the month. The Nellore-Gudur line was energised on 5th October 1951 and supply was given to Gudur town. Tadpatri Thermal stations commenced operation on 10th October 1951 with two numbers 235 KW diesel generating sets.

The generation, peak load and number of services given during the month in several areas were as published in the next page.

Also in the Madras Electricity System, 38 D.C. services with an approximate connected load of 69·68 K.W. were changed over to A.C. supply.

During the month seven extensions costing over Rs. 10,000 and less than Rs. 30,000 were sanctioned by the Chief Operation Engineers and Chief Engineer for Electricity at an estimated total cost of Rs. 1,27,250

fighlights o1 ... for 1951-52

Intensive Cultivation Plan for the year following important schemes are under

provement of Lift Irrigation

Hiring Scheme.—Wells are an important on in South India. Due to present high mals and labour and maintenance charges, entrated on the development of power-ower-lift appliances are (1) comparatively ng and requires less attention, (2) give ly irrigation to crops, (3) an insurance monsoons where the ryots entirely and (4) can cover more acreages in

e portable oil engines are hired to of hire charges are Rs. 3 and Rs. 4 ... 16 ... of the year ...ations by the Department.

mall quantities of standard ricators for manufacture of pply to ryots.

tyres, G.C. sheets, etc., were from the Agricultural depots. the transfer of this work of the Agricultural Department to ocieties. The actual distribution aterials has been transferred to the from July 1950. But the planning work is with the Agricultural Depart-

Fertilisers

stribution of phosphatic fertilisers and ammonium sulphate for increased food —In almost every place where efforts are made cultural efficiency and increase food production nding population, more fertilisers and manures eeded. Fertilisers and manures enable farmers to se production and get higher returns for their expen-re on work and materials. Plants need efficient ients in proper balance for normal growth and develop-nt and these nutrients are applied in a concentrated form soils in the shape of fertilisers and manures. The nt deficiencies are thus set right to enable the raising d crop.

Previously both ammonium sulphate and phosphatic tilisers were being sold to ryots at full rates. The nand for ammonium sulphate was so great, almost to

are easily available in the market ... very closely following this and with the assistance co-operation of the Superintending Engineers concerned, every effort is being made to reduce the unconnected services to the minimum.

Pipes and fittings are essential for all power-pump appliances. Consequent on the increasing number oil engines and electric motors purchased by ryots year after year, there is a growing demand for the supply of pipes and fittings. From 1946, the Agricultural Engineering Branch is acquiring and distributing these pipes and fittings on a "No profit, no loss basis." In spite of acute scaccity of pipes even at the Centre, the Government of India have been trying to allocate to this State as much quantity of pipes as possible, due to the repeated request from this Department, to supply more quantities in order to meet the pending demands. These stocks are procured from the stockists, distributed proportionately all over the State and sold to agriculturists through the District

fertilis... ,080,000 feet of pipes and an appreciable help o... sold to ryots. During propaga... ire and distribute loans for ... ts for ne... up to Rs. ... case free or ... sums of these ... ities extremely sat... manurial drive st... year (viz., 1950–51) will be continued in this year greater vigour and over a larger area. The resu... cutting experiments and also visual inspection areas where chemical fertilisers have been appli... combined basis have shown clearly the resp... realising 20 per cent increased estimate in almost ... with assured water-supply.

A total amount of Rs. 61,36,473 was disbursed as to cultivators during both the crop seasons in 1950–51 it is proposed to issue a loan of Rs. 75 lakhs in 1951–52.

Sale of Improved Seeds

The Government have decided that the village multi-purpose co-operative societies working in the districts of East Godavari, Guntur, Nellore, Tirunelveli, Madurai, Coimbatore, South Kanara and Malabar, should undertake *inter alia* the distribution of improved seeds produced under the supervision of the Madras Agricultural Department for a period of one year in the first instance. The seeds will be transported in departmental lorries in order to keep down the transport charges. The village co-operative societies will undertake the distribution of seed on an agency basis on a commission of Re. 1 per bag of 125 lb. The seeds will be sold to ryots at the rates fixed by the Agricultural Department.

... than the

...rably on ... increased food production on a permanent basis and at the same time improve the economic position of the agriculturists to an apprecia... extent. This is a unique scheme started by the Government first and other States are also anxious to ... similar schemes.

River Pumping Schemes

Another important scheme of far-reaching benefit on a community basis is the establishment of river pumping sets operating from the year 1951–52.

It is proposed to instal river pumping plants on the banks of perennially running rivers and streams, and utilise the water now running to waste. It is unlikely that private ryots will display sufficient initiative and enthusiasm for installing their own community sets firstly because of the high cost involved in the undertaking and secondly because individually they may not possess enough lands alongside the river or stream banks to be tackled by a fairly big set or a group of sets. ... therefore considered necessary for the St... ...through required assistance in the ... drive.

There a... ...garding the ... ...e following ...

	Height from ground level.	Diameter.	Size of gate valve at bottom (diameter).	Distance from the first cistern.
	...″	5′ 6″	7″	..
	24′	4′ 9″	7″	200 yards.
	18′	4′ 6″	7″	350 ,,
	10′ 9″	4′ 6″	7″	600 ,,
	19′ 4″	5′	1″	600 ,,
6	16′	4′ 6″	7″	910 ,,
7	7′	4′ 6″	7″	1,010 ,,
8	3′	4′ 6″	Water overflows.	1,060 ,,
9	5′	4′ 6″	No gate valve.	719 ,,
10	6′	4′ 6″	7″	770 ,,
11	Ground level.	4′ 6″	Water overflows.	880 ,,
12	15′	4′ 6″	6″	Separate unit of well No. 4.
13	10′	4′ 6″	No gate valve.	180 yards from cistern No. 12.
14	5′	4′ 6″	6″	202 yards from cistern No. 12

... ...dozers ... tractors ... and man... labour. The e... been amply demonstrated with saving both in time in a number of districts in the State an... culturists are demanding supplies of these ... increasing numbers. Besides, the bull d... employed to restore to their old efficient fl... a number of spring channels in some of the ... as well as levelling and bunding up ba... gullied fields for bringing them back in... sowing. During emergency drought per... fitted with belt power attachments coul... working trailer pumps for saving crops ... In short, the beneficial uses for which th... machinery could be put to are varied ...

The extent of uncultivated lands ... other than fallows is stated to be co... up agricultural production and to ... food demands of the steadily grow... areas have necessarily to be pressed ... the utmost speed and energy, with... cal means.

Pl... ... sources. Only ... and it is not improbable tha... yet realised this latent gift ...

The water diviner usua... With a Y shaped forked twig ... the area in which the well h... over the potential site, the tw... held firmly to obviate any mo... hands.

While water divining is an intri... through experience and practice are ... water sources, but also judge dept... direction of flow and even predict ... whether potable or brakish. A few ... claim to locating metal resources. ...

Sri T. Veeramallappa, a commission... is reported to be a water diviner who has ... fully in several places. Sri Virupakshi ... Collector, Bellary, who had arranged for sink... his bungalow at Bellary, consulted Sri Ve... when no water was struck even after digging d... feet. The diviner advised that the water curren... within six feet of the well, and could be tapped if a t... was dug. This was duly done and water gushed ... from the tunnel.

Sri Veeramallappa uses rattan cane rods tied to... and painted white, red, green and black for his ... divining. He also uses coloured wooden balls with ... with which he exercises some kind of magnetic ... over metallic objects.

were 339 members on roll with a paid-up share capital of Rs. 7,234.

The society has amended its by-law converting itself into a Multi-purpose Co-operative Credit Society. The Central Bank issued Rs. 11,500 on 6th June 1951 as short-term loan to the society and a major portion of it, was disbursed for purchase of manures. The society has a reserve fund of Rs. 8,682-4-0.

Along with the development of credit business it has ndertaken non-credit activities also. The society has ndertaken the supply of manures. The transactions of manures from 1st July to 30th September 1951 are as follows :—

ear and onth.		Name of the commodity.	Purchase.			Sales.		
			RS.	A.	P.	RS.	A.	P.
1951.								
July	..	Ammonia ..	1,874	9	0	3,366	9	0
		Superphosphate ..	1,393	7	0	751	2	0
August	..	Ammonia ..	8,410	14	6	8,256	8	0
		Superphosphate ..	836	1	0	568	12	0
September	..	Ammonia ..	..			227	5	9
		Superphosphate ..	..			..		
			12,514	15	6	13,170	14	9

Kunnathur

nnathur Ex-tappers Weavers' Co-operative riperumbudur taluk in Chingleput district was 1st June 1949 and started on work on 9th o find employment for the ex-toddy tappers of employment in Chingleput district. Kunna- ted about 4 miles from Poonamallee on the orur-Kancheepuram Road. There are avers' societies working in the area which re producing mostly lungies. The ex- me knowledge of weaving and it o organise arrang for the marketing onver- vantage of the society. For competent to borrow from rict. is oers with a paid-up share ne of starting. Soon t the end of the yea capital of e were mem the society e society 1950-51, i.e., entral ers with a paid-up shorty borrowed Rs. 2,000 nk, Kancheepuram, on term loan and was able to 951. It has invested Rs. 1,000 ank, Rs. 500 in the Madras Co- takal, and Rs. 50 in the Limited, Madras.

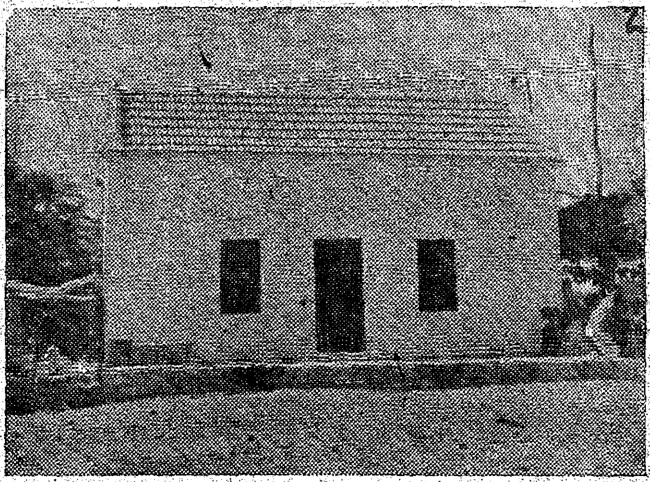
in the business of the ced keen interest in with the professional f fine lungi pieces. admitted in the the increase king in the s given a 50 pe- dent

increased to 83 bundles of 90s and 26 bundles of 60 increase in looms. The members weave different of lungies of 4½ yards in length and 29″ in width f a weaver is paid a wage of Rs. 4-8-0. A weaver ca this in two days. On this basis he gets Rs. 2-4-0 p Due to the slump in the lungi market and shortage of a weaver member gets work only for 12 to 15 days a m The quality of the goods produced by the ex-ta weavers is now good and they are exported by the m chants to Burma, Ceylon, Indonesia and other fore markets. The business done by the society in the operative year 1950-51 was as follows (1st July 1950 30th June 1951) :—

	RS.
The value of opening stock of yarn	1,694
The value of yarn purchased	29,778
Dyeing charges paid	2,745
Incidental charges incurred	93
Value of goods at the beginning of the year.	166
Value of stock sold	74,100
The value of closing stock	4,220
Wages paid to members	33,023

The society maintained three clerks and one watchman and incurred Rs. 2,370 during the year by way of establishment and contingent charges. It earned a net profit of Rs. 10,368 during the year. The profit of the society is not yet distributed. It has provision in its by-laws to set apart 40 per cent of the net profits to Reserve Fund ; pay not exceeding 6¼ per cent as dividend on the paid-up share capital of members ; to pay such amount as may decided by the General body of members as bonus members based either on wages paid or value of goo supplied honorarium to directors not exceeding 20 per profits, and to allocate sums to such funds as qualization Fund, Common Good Fund, Building , etc., as approved by the General body of members out of its profits.

During the short period of two years of its existence, the society has done useful work in ameliorating the condition of the ex-tappers. Besides providing employment and living wages to the members, it has enabled



Reading Room put up by the Batreddipalle Multi-purpose Co-operative Society.

Multi-purpose Co-operative Societies

Kurungulam

ungulam Multi-purpose Co-operative Society is a ociety having passed the first year of its working. It egistered on 2nd February 1950 and started work on h April 1950. Its area of operations comprise of the two enue vattams of Kurungulam and Menangudi vattams. maximum borrowing power is Rs. 25,000. It owes . 7,654 to the Co-operative Centrlal Bank, Limited, umbakonam, under loans, besides the cash credit accomodation of Rs. 2,000 sanctioned by the Bank for prompt ue of short-term loans. There are 27 loans outstanding inst members to the tune of Rs. 9,026. It has invested shares Rs. 120 in Co-operative Central Bank, Limited, umbakonam, and Rs. 100 in the Tanjore Central Co-perative Stores, Limited, Tiruvarur. As it is only a year since the society was started, it has only Rs. 14-11-0 to the credit of its reserve fund.

During 1950-51, the society was doing multi-purpose activities also, besides credit. It dealt with the retail distribution of coffee seeds purchased from the Tanjore Central Co-operative Stores, Limited, Tiruvarur, and retail distribution of groundnut cakes and jaggery. The total transactions during 1950-51 under non-credit activities were Rs. 2,071-6-0. There was a gross profit of Rs. 85-10-0 in trade in 1950-51. Though it is only a year since the society was started, it has done well in all directions.

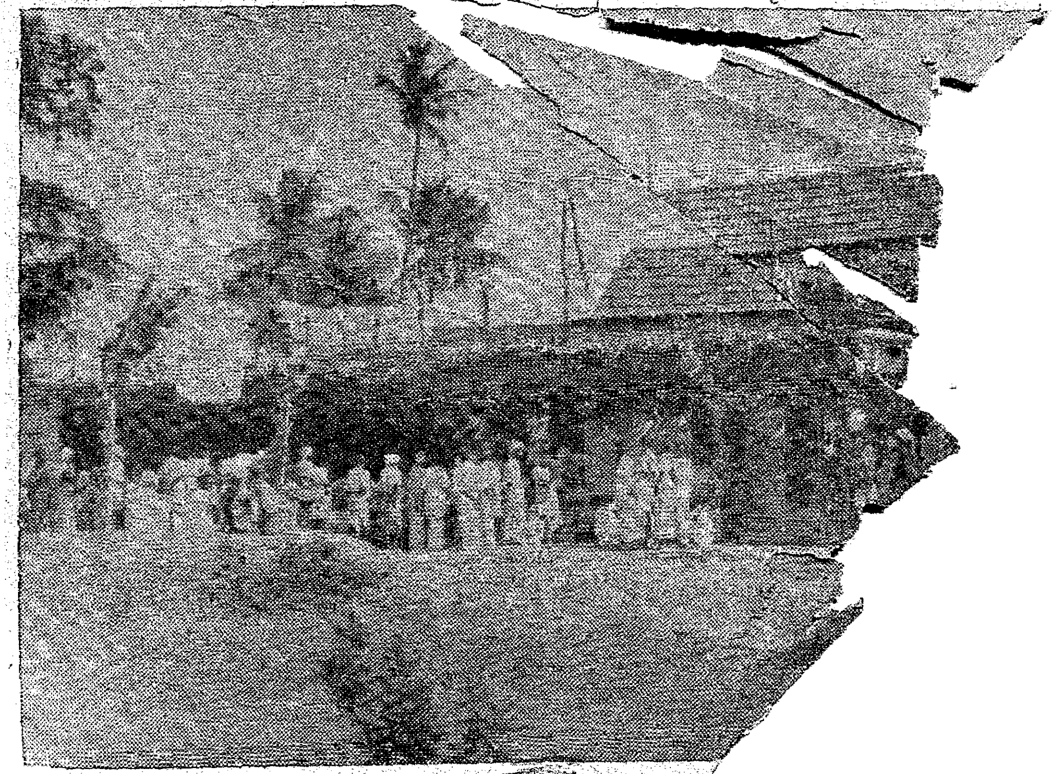
Baireddipalle

airedddipalle Multi-purpose Co-operative Rural iety in Palmaner taluk of Chittoor district was registered on 11th October 1920 and started work on 3rd March 1921. Its area of operations is confined to three main villages, viz., Baireddipalle, Kammapalle and Devadoddi including their hamlets. The society commenced work with 21 members with a paid-up share capital of Rs. 231. At present there are 346 members with a paid-up share capital of Rs. 6,809. The society has been providin credit facilities to the agriculturists. 235 members ov to the society under loans Rs. 53,577 out of which Rs. 4,54 are overdue. The Board of Directors are taking steps to recover the overdues. The society has been able to ta local deposits to the tune of Rs. 20,637-8-0; Rs. 21,891 been borrowed from the Chittoor District Co-oper Central Bank.

Besides affording credit facilities to its members, the society took up multi-purpose activities also, such as supply of agricultural implements, introduction of Homesafe deposits, etc. With a Government subsidy of Rs. 3,750 and a Government loan of Rs. 2,300 sanctioned to the society, the long-felt need of a pucca godown has now beer fulfilled by constructing a godown at a cost of Rs It was opened by the Deputy Commissioner of Pr (Amelioration) and Joint Registrar of Co-operati ties, Madras, on 19th October 1951.

Pedamaddali

The society was registered on 18th Janua started on its work on 6th February 1919. 34th year of its working. It is situated in revenue firka, Gudivada taluk. On 30th Ma



Godown constructed by the Baireddipalle Co-operati

them to put by in the Thrift fund of the society a sum of Rs. 1,986 up to 30th June 1951, out of the wages earned.

Pannur Leather Works' Co-operative Society

Under the amelioration scheme, a cottage Industries Co-operative Society was formed at Pannur village in the Chittoor district, with a view to provide employment to the Harijans residing in the village. The society was registered on 23rd March 1949 and started on work on 25th March 1949. Twenty-two worker-members and 18 others have so far joined the society with a paid-up share capital of Rs. 2,530. The society supplies raw materials to the Harijans for making shoes and other leather goods and it also arranges for the marketing of the goods produced by the members. The following varieties of leather goods are produced by the society :—

Chappals.	Holdalls.
Kabul Shoes.	Leather bags.
Boots and shoes.	Canvas bags.
Money purses.	Pen racks.
Belts.	Suit-cases.

During 1949–50, the Society purchased raw materials for Rs. 2,743 and effected sales of finished goods to the extent of Rs. 3,984 and earned a net profit of Rs. 337. During 1950–51 raw materials worth Rs. 2,923 were purchased. The sales effected amounted to Rs. 2,309. The transactions resulted in a loss of Rs. 139. During the period from July to September 1951, the Society purchased raw materials worth Rs. 2,813, produced goods worth Rs. 3,150 and effected sales amounting to Rs. 2,119.

The Chittoor Central Bank has sanctioned a cash credit of Rs. 4,000. The amount outstanding in the cash credit account at the end of September 1951 was Rs. 2,. Government have sanctioned the following assista. to the society :—

(i) A Junior Inspector at Government cost in charg of the society. The Junior Inspector is continuing in th society from 16th February 1950.

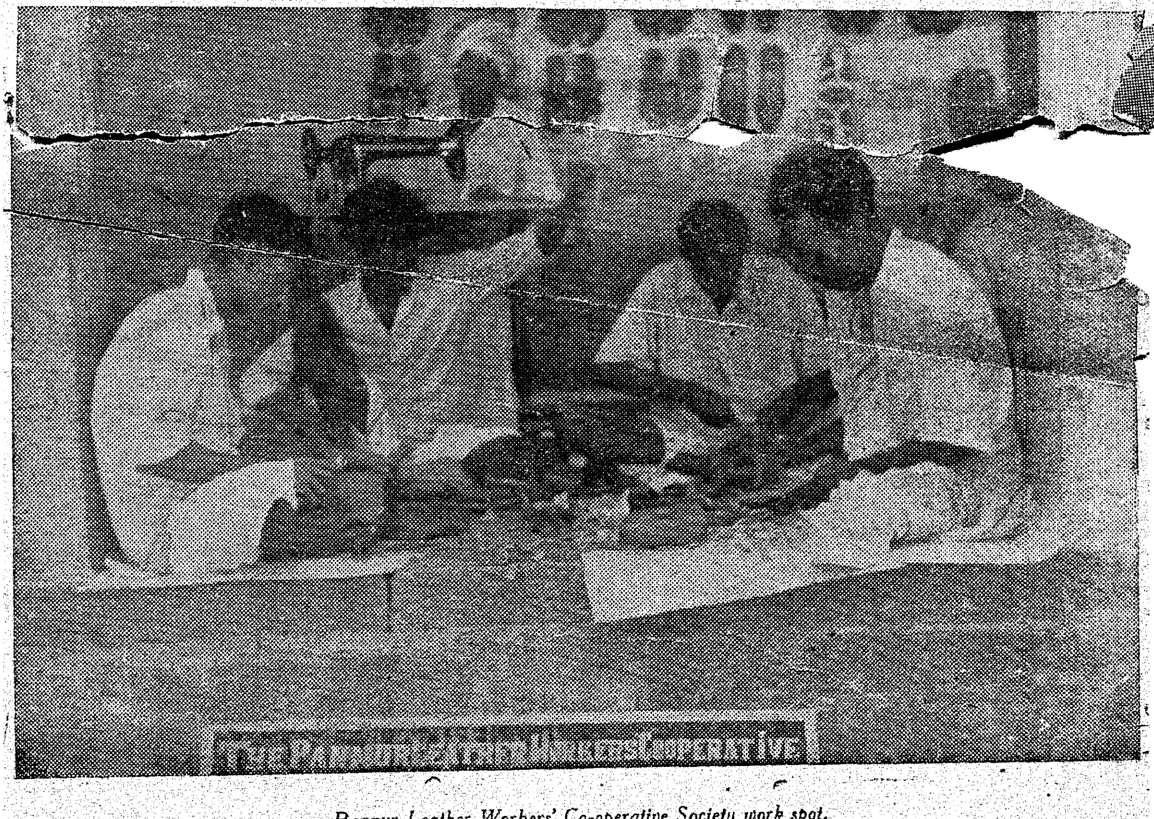
(ii) An ex-gratia grant of Rs. 2,000 to be credited to the share capital account of the worker members. The share capital is non-refundable.

(iii) The employment of a leather Instructor for period of six months at Government cost. The the Instructor has been appointed recently.

With the appointment of the leather Instructor, quality of the goods produced is likely to improve and goods produced by the society will command a b market.

Co-operatives and Mill Cloth Distribution

In G.O. Ms. No. 4575, Development, dated 17th October 1951, Government accepted the proposals of the Director of Controlled Commodities for the reallotment of mill cloth quota to co-operatives in respect of the Bombay and Ahmedabad centres. In order to formulate the arrangements in this behalf a conference of the representatives the Co-operative Wholesale Stores and the Triplica Co-operative Society was held on 1st November 1951 at the Senate House, Chepauk, Madras, under the presidency of Sri J. C. Ryan, Registrar of Co-operative Societies, Madra The conference resolved to work the scheme of procurement and distribution of mill cloth sanctioned by the Government and to request Government to arrange for the supply



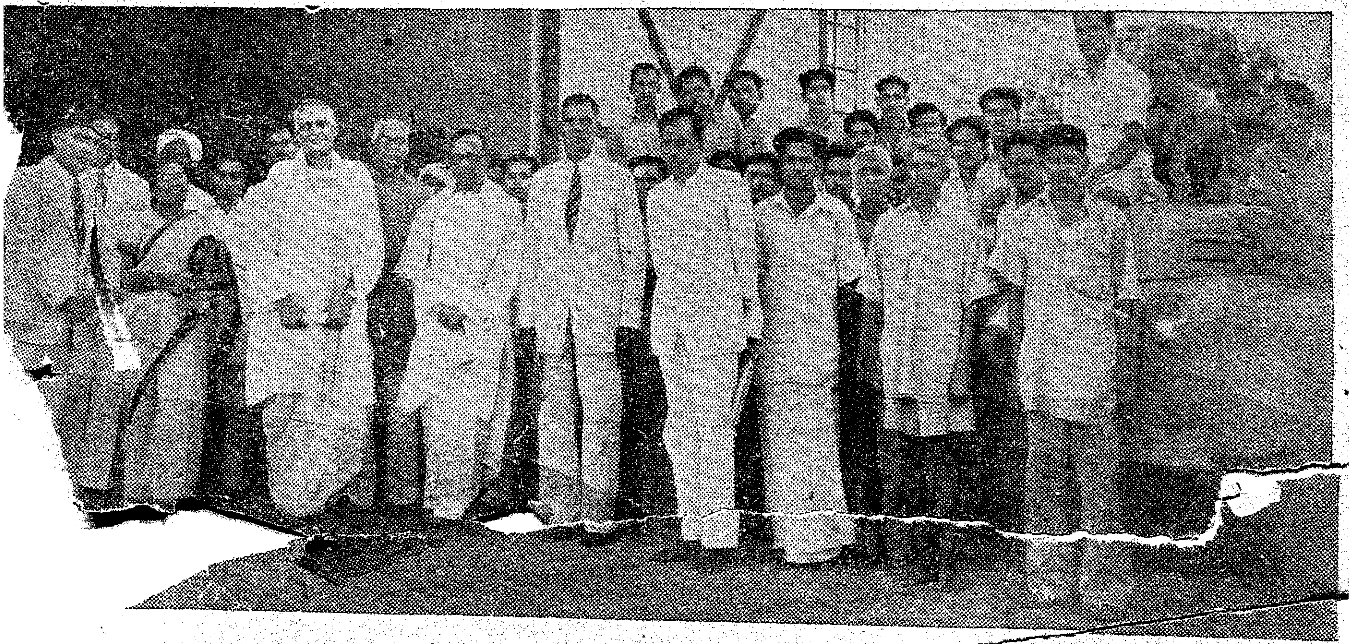
Pannur Leather Workers' Co-operative Society work spot.

..lar varieties of cloth manufactured by the B. & C. the ..tur and the Loyal Mills also to the Co-operatives. For procurement of mill cloth at the Bombay and Ahmeda-..I centres, it was proposed to appoint commission agents .. those places to lift the cloth on behalf of the Co-operative ..holesale Stores. The retail distribution of mill cloth ..uld be entrusted to primary stores societies, Village ..ulti-purpose co-operative societies, employees' societies, ..

The co-operatives will commence working the scheme as ..on as allotments of quotas are made by the Director of ..nt.. ..Commodities, Madras.

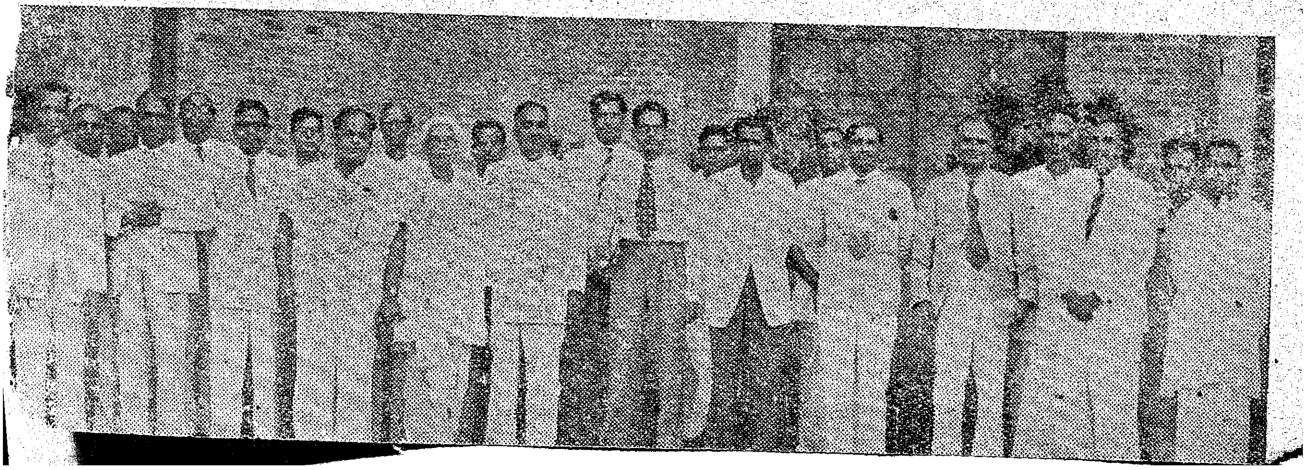
Exemption from Entertainments Tax
What Sabhas should Do?

..October 1951, the Government issued orders exempt-.. for a period of two years from November 1, 1951, all music and dance performances and variety entertain.. conducted by registered music Sabhas and similar Associations in this State. Several Sabhas and Associations have requested that their names be included in the list of registered and approved Sabhas and Institutions exempted from payment of entertainments tax. It is hereby made clear that no such list is at present maintained by the Government. All that is necessary for a registered Sabha or Association to do is to apply to the Deputy Commercial Tax Officer having jurisdiction over the area in which the Sabha is functioning, for a general exemption. The Deputy Commecrial Tax Officer, will after such enquiry as is necessary, submit the applictaion to the Commercial Tax Officer concerned who will pass orders on it. Once the Commercial Tax Officer exempts the Sabha generally, no specific exemption in respect of individual performances conducted by the Sabha from time to time is necessary. Such performances will be automatically exempt.



The Guntur District Co-operative Motor Transport Society for Ex-servicemen, Limited, Guntur. Hon. Sri Kala Venkata Rao paid a visit to the Society recently.

Photo taken on the occasion of the conference of the representatives of the Co-operative Wholesale Stores and the T.U.C.S. held on 1st November 1951 at the Senate House, Chepauk, Madras.



Road Communication in South Arcot District

History

There are no roads in South Arcot district associated with the names of the Kings of olden times as in other districts in the South. Local traditions reveal however that the road from Manalurpet to Tyagadurgam and on to Assanur on the Madras-Trichy Road, was the route of the ancient Chola kings of Tanjore for pilgrimage trips to the famous temple at Tiruvannamalai in North Arcot district. But the road itself does not have the necessary adjuncts of such a hoary tradition.

From the earliest times of the East India Company paucity of roads in the district topped the list of wants. The "least wretched" of the lines of communications at that time was the old Madras Road entering from Merkanam in the North and following the coast line to Chidambaram in the South. Even this was very sandy owing to its proximity to the sea; hence a new road passing through Tindivanam, Villupuram, Ulundurpet and Tholudur was formed.

In 1852, a programme of 400 miles of new constructions were undertaken chief of which were the Cuddalore-Salem road *Via* Vriddachalam and the Panrutti Lower Anicut road *Via* Sethiathope Anicut. It is worthy of note that these constructions included the planting avenue trees by the sides of these roads also.

Mr. Malty, the then Collector in 1853, had suggested a levy of one anna per kani of land for construction and repairs of roads and this is the nucleus from which the legislation for levying a separate "Road Cess" grew up and exists to this day.

Even after the road cess was levied and Local Boards were inaugurated there was not much development in the matter of communications and the total mileage gradually rose from about 550 in 1854 to 902 miles in 1905 and 1,194 miles in 1920. Subsequent to this with the enthusiasm displayed by the non-official Presidents of ... Boards the mileage rose to 1,526 miles in 1932 ... to 2,059 miles in 1938.

Present Position

...esent, there are 2,034 miles of roads in the district ...ding those handed over to the Public Works ...rtment on 1st April 1946) of which only 1,299 miles ... motorable. The area of this district is 5,218 square ...iles and this means 0·39 mile of road per square mile ...gainst the State average of 0·29 mile per square mile. ...he population of the district is 26·09 lakhs according to ...he 1941 census and the population served by mile of road ... 1,295 as against the State average of 1,346. Hence while mileage in area basis is more than the State average ...he mileage on population basis is slightly less than the State average.

Classification of Roads

...ere are 86 miles of National Highways of all-India ... and 90 miles of Provincial Highways of State ... The "District Roads" are the important towns. These District Roads are furth... subdivided into "Major" and "Other" District Roa... according to their relative importance. All the Maj... District Roads are eventually to be maintained at Sta... expense and the other District Roads by the Distri... Board.

The Post-War Road Development Plan contemplate... the addition of only 9 miles under Major District Roa... and 174 miles under other District Roads.

In addition to the above classification there are v... roads, which are purely feeder roads to villages. The... are 658 miles of such roads and 759 miles more are propose... to be formed under Post-War Road Development.

Rural Roads

The population of 26·09 lakhs in the district are distributed in 2,340 villages and towns. Out of this 158,322 people, i.e., 60 per cent of the population live in 594 villages, each of which has a population of less than 500; of the balance of 1,749 villages or towns with a population of 500 and above 75 per cent are already served by roads and th... Post-War Development Plan aims at providing access roads to the balance of 25 per cent also. This however does not contemplate provision of roads to villages with less than 500 population in view of the sheer magnitude of the scheme. Some of them however already lie in existing roads and many more will come within easy reach of th... new roads to be formed. The Post-War Road Development Plan proposes 942 miles more of new roads and this when fully implemented will give a total of 2,977 miles of road... serving villages in which 94 per cent of the populatio... reside.

The first Five-Year Programme of the Post-War Roa... Development is in progress and 15 miles of new ro... have been completed so far. All these formatio... a... mostly of small lengths of less than five miles and ... important long length of formation is envisaged, wort... of mention. Land acquisition presents great difficul... and it is hoped that the recent changes introduced in procedure will result in solving this problem and quick progress in the formation of new roads.

Surfacing of Roads—Metalled Roads

The soil in the District is not favourable to road-makin... In Cuddalore and Villupuram taluks, the soil is san... loam, which has to be stabilised with clay, to form a ... for any surfacing to come on top. In the Chidam... taluk which is a delta area, we have the double disadv... tage of unfavourable clay soil added to water logged... tions. Practically the whole of Vriddachalam ... black cotton area and even Kallakurichi, T... Tindivanam and Gingee taluks which ar... have considerably large areas of black co...

Blasted granite is used for roads wit... even this is available only in a few p... taluks of the district. Laterite ... traffic in other distr... roads ... available in Cuddalo... kind of metal i...

Out of a total length of 2,034 miles, only 936 miles are ıetalled and 215 miles were proposed to be metalled ınder Post-War Road Development. Thus there is very nuch headway to be made in the matter of providing ıll-weather metalled roads in the District. At present, the ıajor district roads maintained by the District Board an only be euphemistically called metalled, while several her district roads are not even gravelled. Village ıads in black cotton soil areas are in bad condition, s even the provision of a hard base is costly and mainte- ınce only consists in making impassable stretches tolerable by the application of sand.

In Cuddalore, Vriddachalam and Chidambaram taluks, ere is paucity of granite metal for main roads and the ıe has to be transported by rail. A stone crusher has been installed at Padur and is working for the ıst two years. As it is difficult to secure wagons in the ıason for collection of materials owing to sugarcane ansport, it is hoped to increase production of this usher so as to solve the problem of Rail transport once ır all.

Traffic Intensity

The volume of traffic, its composition and direction of flow, are essential data for the design and subsequent maintenance of a road. An outstanding feature revealed y traffic figures, is the fact that since 1946, the total olume of traffic on all roads has increased appreciably ver the pre-war figures. This increase is observed to be nore under motor vehicles than bullock-carts as the ormer method of transport is proving more popular. Again even this increase in motor vehicles were marked n the case of vehicles of 3 to 5 tons and over 5 tons. Thus he road surfaces are now called upon to bear the heavy oaded trucks and buses to a much greater extent than efore the war. It is therefore evident that better types road surfaces have to be provided for sections with vy traffic, if the road surfaces are to be in fair condition.

The traffic intensity in the National Highways from dras to Trichy is over 1,500 tons up to Cuddalore from e North and further south it tails down to 500 or 600 s only.

The traffic intensity on Provincial Highways is 500 to 600 s only, except on the Cuddalore-Chittoor road. The -10 miles of this road falls within the sugarcane area d carries a traffic of 1,500 tons and a length of 16 miles continuation is an access road to the Head Quarters f the district from several taluks in the interior and ırries a traffic of 2,000 tons per day.

On the other Government roads, the traffic intensity nly between 500-1,000 tons per day.

District Board roads, there is only one major district Vikravandy Lower Anicut road which carries a of more than 1,000 tons. The rest of the major ds and other District Roads carry a traffic ns or less.

Concrete and Black Top Surfaces

g as cement concrete or bitumen treated gh initial cost specially the former, al, owing to their longer life and o financ stringency, improved tretches where the s uneconomical.

Bitumen surfacing is being done under maintenance specially in built-up areas of towns and villages as these areas have to be made dustproof. The Madras-Trichy National Highways is black topped for a length of 20 miles from the North and this is being gradually extended to Villupuram and further south. Portions of other towns as Chidambaram, Vriddachalam, Ulundurpet and Tindivanam have already been provided with black topping surface and the work is being continued every year. The total length of black-top roads now is 48 miles and a further length of 75 miles have been proposed to be completed in two years.

There is at present only 8 miles of cement concrete road, three m out of which are near Nellikuppam Sugar Factory. Further work in this area is in progress and ultimately the first 10 miles of the Cuddalore-Chittoor Provincial Highways will be a cement concrete road 18′ 0″ wide. The road from Chidambaram to Bhuvanagiri has been cement-concreted and nearly completed recently and the total length is 4 miles. There is a proposal to provide cement concrete pavement for miles 10/16 of the Cuddalore-Chittoor road as this stretch already carries more than 2,000 tons traffic and is bound to increase in the future.

Major Bridges

South Arcot district is affected by monsoons in the Bay of Bengal and the consequent high floods have carried away many bridges in the past. All of these have been reconstructed except two—one across the Coleroon which is the boundary between the South Arcot and Tanjore District and the other across Pambai River near Villupuram. These two are however now in progress.

Under the Vipan Scheme of Road Development, out of 18 bridges proposed, only 9 were taken up and completed. The Post-War Road Development Scheme, which has now superseded the Vipan Scheme, provides for the construction of 17 major bridges at a cost of Rs. 38 lakhs. Besides this, one bridge is also proposed under the Road Development Fund Programme financed by the Government of India on the Tyagadurgam-Manalurpet road.

Two bridges, one over Coleroon and another at Gingee estimated to cost Rs. 26 lakhs and Rs. 98,500 respe are in progress and 5 other works are under inv

Minor Bridges and Culverts

The numerous smaller water courses form bottle the communications system and call equally for and culverts. The Post-War Road Development provides for the construction of minor bridges cos Rs. 25 lakhs. Under the Five-Year Plan 19 works ha been taken up for execution and 8 works have be completed.

Administration

The roads in the district, as all over the State, are divided into 4 groups for purposes of administration, viz., Govern ment, District Board, Municipal and Panchayat roads The National Highways are financed by the Government of India but administered by the State. The Government finances Provincial Highways and a m of major district roads, while District Board fi rest of the major District roads, other D

e Municipalities of Cuddalore, Chidambaram and Tindivanam finance the roads and streets left in their charge and Panchayats numbering 13 look after the purely local roads of very minor importance and their streets. The State Government gives grant to the District Board, Municipalities and the Panchayats for road improvement works.

All Government and District Board works are executed by the State Highways Department; Panchayats carry out their own works, but certain original works of Panchayats are executed by the Highways Department with payment of centage charges. Municipal Road works are executed by their own staff but occasionally the Highways Department is required to take up some important works for them as deposit works.

In the District, the Highways Department has a Divisional Engineer with Headquarters at Cuddalore, 5 Assistant Engineers with Headquarters at Tindivanam, Tirukkoilur, Cuddalore, Vriddachalam and Chidambaram and 18 supervisors as below ;—

1 Tindivanam Subdivision.	Tindivanam East.
	Tindivanam West.
	Gingee.
	Vanur.
2 Tirukkoilur Subdivision.	Tirukkoilur West.
	Tirukkoilur East.
	Kallakurichi.
	Ulundurpet.
3 Cuddalore Subdivision.	Villupuram East.
	Villupuram West.
	Panruti.
	Cuddalore.
4 Vriddachalam Subdivision.	Kurinjipadi.
	Vriddacha'am.
	Kaludur.
5 Chidambaram Subdivision.	Sethiathope.
	Chidambaram.
	Portonovo.

Out of the above five subdivisions, the first four are permanent and the fifth at Chidambaram is a temporary subdivision formed and continued from 16th September 7. In addition there is a sixth temporary subdivision the work of cement concreting Cuddalore-Chittoor 1/6-10/0 with one Assistant Engineer and two ...rs.

Expenditure

... expenditure incurred in recent years on Road ... in this District is given below :—

	Maintenance.		*Original works.*		*Total.*	
	Govt.	*Dt. Bd.*	*Govt.*	*Dt. Bd.*	*Govt.*	*Dt. Bd.*
1946–47 ..	5·88	2·94	13,613	52,538	6.02	3·47
1947–48 ..	7·92	4·93	42,982	1,50,526	8·35	6·44
1948–49 ..	13·11	5·70	89,017	3,98,147	14·00	9·68
1949–50 ..	12·84	5·20	3,17,185	3,53,221	16·01	8·73
1950–51 ..	11·59	6·02	3,73,603	2,69,940	15·33	8·72

It may thus be seen that large amounts are being spent for the improvement of roads and that the expenditure is fairly steady for the past three years ending 1950–51.

Avenues

As already said under "previous History" avenues have been long associated with roads in this District ... avenues originally planted in the middle of the ... century are existing even to-day. Within the last t... years special attempts have been made to plant trees in the gaps and the same effort is being continued.

The total number of avenue trees at the end of 1950– on Government roads was 91,369 and on District Board roads 13,001. The total number of trees in the District is thus 104,370.

Places of Interest

Gingee, the headquarters of the taluk, is a great historic interest. It was the Headquarters of the later line of the Vijianagar kings, after their downfall. The main fort is on the top of a precipitous hill unapproachable on three sides and the entrance on the fourth side is controlled by a draw bridge. There is a smaller ... on the lower hill. Only old ruins of the Forts are seen now but inscriptions are of archæological interest.

Cuddalore Old Town and New Town

Cuddalore old town is a port from a longtime, which is even now used for both export and import of merchandise. Cuddalore New Town contains the old Fort St. David near the sea, reminiscent of the 18th Century rivalry between Britain and France. The present Collector's residence was the old quarters of Lord Clive and the grounds o the St. Joseph's High School are still called Colonel's gardens.

Pondicherry

This is the headquarters of the French possessions in India and is 13 miles north of Cuddalore and equally reminds us of the days of Lord Clive and Dupleux. The town attracts devotees from all over India to the shrine of the late Sri Aurabindho Ghose.

The Veeranarayana tank near Sethiathope in Chidambaram taluk is a large tank fed by a supply channel from the Lower Anicut across the Coleroon River. The area of water spread is about 8·5 sq. miles and when the tank is full, this will be a beauty spot and may also be of interest for snipe shooting.

Nellikuppam, 6 miles from Cuddalore, contains Messrs. Parry and Company Sugar Factories with a capacity 2,000 tons per day and is the largest such factory in South India. It contributes both to the increased traffic in ... area and to the paucity of wagon for transporting ... metal in the working season, which coincides with cane season.

At Neiveli, a Railway stat on, on the Cuddalore-Vriddachalam line, 24 miles from away, there are Artesian springs above a rich layer of lignite. Exper ments are being conducted here by a special staff as to the best means ... disposal of the water and the quarrying of the lign... below.

This district is a large producer of groundnut and owing to this there are large oil Mills at Villupuram in the ... and Vriddachalam in the South, manufacturing groundnut oil for export.

At Merkanam in the North, the manufacture ... under Government control is undertaken and ... distributed to all the outlying districts from ...

Chidambaram is a favourite place of pil... India importance built during the t... Kings of Tanjore. The district abou... temples of lesser importance tha... which also attract pilgrims durin...

(Continued on ...

India and Indians Abroad

New Status After Independence

By Sri J. M. LOBO PRABHU, I.C.S.

[Address by Sri J. M. Lobo Prabhu, I.C.S., Secretary to Government, Development Department, Madras, to the TOC. H., India, at Egmore on Friday, the 30th November 1951.]

/isiting 20 countries, I realised the paradox that one conscious of one's country, only when one is not in it. merely differences in language, physiognomy, manners, oa compel attention to one's identity, but the very dis- ice from one's country tends to define it. The nostal- nay take poetic forms in those capable of expressing m as when Browning " sighed to be now in England ", Byron wrote " of mourning by the Arno for the lovelier es ", and Brooke dreamt of " laughter, born of hearts of ice under an English heaven". Even for those not ceptible to fancy, absence makes their country dearer.

have been abroad several times, but it was only on trip last year that I was conscious of the new status dia and Indians have acquired in other countries. Inde- endence has not only changed the colour of India on the rld map, but, in spite of partition, increased her relative nensions politically, economically and morally. e change is not due only to independence but partly what was before and much to what has happened since. fact that India was the first Asian country to acquire pendence has stamped her as a leader to those countries acquired independence since like Burma, Ceylon, nesia and other countries which are struggling for inde- dence like Malaya, Indo-China and Japan. This leader- has been emphasised by the fact that India has never let up on the theme that independence is the best basis for co-operation and peace.

Secondly, India is the most considerable vacuum between the global forces of Democracy and Communism. Both these forces consider, that if India inclines against one of them, the archstone of Asia will be lost to the other. Here again the emphasis of our foreign policy on neutrality has added importance to our international position. In a sense, the world is solicitous that India may not be impoverished to the extent that she sells her political integrity.

Thirdly *the position of India is due to the eminence of her leaders. Mahatmajee has become the apotheosis, the deification of the highest moral values. Pandit Nehru has become the symbol of the fearless spirit of human liberty. He bestrides the Asian world like a Colossus, against forces of exploitation.*

Lastly, India derives her position from her past. Throughout Asia there are traces of India's culture, while the rest of the world is becoming increasingly conscious to certain moral values which are India's heritage.

Burma

The position of India in Burma arises from the circumstances that till recently Burma was part of India, bound to her by unity of administration, education and trade. Throughout Burma, Indians may be found as traders, while a great part of that country was opened up by

The World Bank Mission visited the Madras Government Secretariat on the 1st of December 1951 and discussed a number of subjects with the Representatives of the Government of Madras. Here are seen the members of the Mission with its leader Dr. W. Koster and State Officials

Indian labour and finance. In spite of the cry of nationalism, Indians still enjoy an honoured place in the life of Rangoon. The Ambassador Rauf, who had practised for several years as a barrister at Rangoon, has been personally associated with most political leaders, who regard him as one of their own. His charm also enables him to a secure place in the diplomatic community with whom he is on the friendliest terms.

Siam

In Siam, India's position is related to the cultural conquest by the Kalinga Chola and Pallava civilisations, which outpoured into these areas for nearly ten centuries. Though a Buddhist country, Siam shows many traces of Hindu influences. I saw one king of Siam being cremated and another crowned by Brahmin priests, according to what was essentially Hindu ritual. The present position of India is due almost entirely to the Indian Minister, Bhagwat Dyal, who is every inch a diplomat and is probably the dearest of all dimplomats to the Thai Government. His sympathy with the Thai Government's interests, his personal friendship with the ministers, almost made it appear that he was going to be kept always in Siam. He has now gone as ambassador to Indonesia, but his influence will survive for long.

Malaya

In Malaya, India's position arises from the fact that one-tenth of the population is Indian, which opened up he rubber plantations and is even now their mainstay. The Indian population has also played an important part in the politics of this unfortunate country. In trade, our traders seem to dominate in Singapore, at least in respect of textiles. It is fortuna e that Trade Commissioner, Singh, possesses the personality and drive necessary to advance our trading interests.

Hongkong

At Hongkong, Indians have some place in the trade and are doing very well for themselves. There are also some Indians in the adm nistration and the police. The Sindhis and the Parsees appear to be predominant. There is no representative o the Indian Gove nment at Hongkong, but the British authorities are available in urgent matters and the Indian Trade Commiss oner at Singapore in all questions of importance.

Japan

In Japan, India was occupying a place of importance as a membe of the S.C.A.P. (Supreme Command o Allied Powers . Trade possibilities, the range of whicl could be greater but fo Japan being in the dollar area, are drawing an increasing number of Indians to whose economy is now almost restored to pre-war conditions. In its representative K. K. Chettur, India is most fortunate, as he has made a most favourable impression both on the Allied Powers and the Japanese. It is enough I mention that he had only to suggest tha would like to see General McArthur for an interview to arranged the next day. In the ong talk I had w McArthur, he referred in almost affectionate terms his relations with Mr. Rama Rao and Justice Pal. Adm. Radford, who was a guest of Admiral Joy also gratifi my pride by his praise of Sir Ramaswami Mudaliar, wh he met at a conference in Baggio. I would like to say I hea praise of other Indians in other places also from importa persons like the Premier of Burma, Prince Dhani of Sia and Malcolm MacDonald, British High Commissioner the Far East. The Japanese, as a whole, are enthusias about us and spare no pains to show their beautiful coun and its characteristics.

U.S.A.

In the United States, in the ri context, our off l representatio Or ly one fact appears to have of our ambassador, Mrs. Pandi no other foreign representative is known probably to every Americ sis ter of Prime Minister but as a wor

A luncheon party was given to the Members of the World Bank Mission during their visit to Madras City. Here are seen the guests and Hon'ble Sri P. S. Kumarasami Ra ja, Hon'ble Sri M. Bakthavathsalam and others.

ith perhaps unequalled charm, and outstanding ability. Inspite of the fact that India has not chosen to follow the olitical aims of the U.S.A., or perhaps because of it, there s a wide and deep interest in everything Indian. In the nore understanding, there is respect for India's devotion o her ideals, even at considerable cost.

United Kingdom

There will always be an India, in the United Kingdom, but I was surprised that independence has tended to nphasise this. The number of Indians, and their place the economic life has grown. The friendship between e two people is now genuine being based on mutual spect. Krishna Menon, the High Commissioner, who was ege with me, typifies the dignified and friendly lations between our two countries. Without sacrificing is own qualities, he is completely one with the English ene. In this connection, I remember a lunch at India e. When discussing MacArthur, Menon complimen- Kingsley Martin for his paper being the one and only pendent paper in England. Kingsley repartied by ıg that India was the one and only independent try in the world which in the context of Marshall Aid e world, could not be denied.

France

France, India has great respect on account of her ry and culture. I was able to meet the great econo- , Andre Gide, the existentialist philospher, Sartre, sters of the Government, Monte and Berdeau. I felt d about their ideas of India.

Germany

in Japan, India has a place by virtue torious Powers. Really India has ess of Germany by two of her and Prem Kishan, both my friends. Both Mr. and Mrs. zest for life which is irresis- al Singh, First Secretary, his wife in Hamburg form fitting members ll.

Italy

Sen, with whom I worked in the Food ı, very appropriately fills the ambassadorial marble palace in which they live, the Sens the most intellectual company available in nabled to meet some of these intellectuals. ate audience with the Pope.

Turkey

rue, Jha is making an impression for In this very secular Islamic country toleration is greatly appreciated, as the Asia from its internal weakness.

Mohmad Yunus and his charming wife lture. At Karachi, Khub Chand and his lship so badly needed between ourselves is genius that can discover and organise riendship, the existence of which cannot lings of the common people are studied.

After my long tour, I had only one feeling, that our representatives in various countries could not have been chosen better. For a young service, they have done as well and even better than the age old diplomatic missions of many other countries. They have put India on the map of the world, as a country, old in its traditions, and new in its aspirations, to be a worthy member of the comity of Nations.

(*Continued from page* 37)

Mylam, Srimushnam, Vridachalam, Tiruvendipuram, Tiruvedi, Tirukkoilur, Tiruvarangam and Tiruvakkarai, Vadalur.

The district is fairly fertile even in dry areas and with further improvement in communications, agriculture and industry will be greatly benefited.

Statistics showing areas, population, number of villages, length of roads, etc., for South Arcot District.

	Area.	*South Arcot District.*	*For the whole State.*
1	Area	4,201 sq. miles.	127,768
2	Population (1941)	2,608,763	4,98,40,564
3	No. of divisions	1	37
4	No. of subdivisions ..	4 1 (tem,) 1 (Special).	101
5	No. of sections	16 permanent 2 temporary.	367
6	No. of villages less than 500 population (1941).	594	12,669
7	No. of villages more than 500 population (1941).	1,749	23,683
8	No. of Panchayats (Major)	13	418
*9	No. of Municipalities	4	92
10	No. of Firkas under Rural Welfare department.	4	35
11	Length of Government roads.	548	15,187
12	Length of District Board roads.	1,449	22 181
13	Tota' length of all roads ..	1,997	27,358
14	Length of National Highways.	86 0 0	2,000
15	Length of Provincial Highways.	90 2 0	3,096
16	Length of Major District Roads Government and District Board.	731	16,071
17	Length of other District Roads.	466	7,780
18	Length of village roads ..	623	8,411
19	Minimum allotment r quired for Government roads.	19,55,492	5,03,11,688
20	Average rate per year ..	3,567	3 313
21	Provision made in the 5 year programme of P.W.R.D.	56·31	1,207·23 lakhs.
22	Length of cement roads (1949).	1 3 0	141 4 16
23	Length of black top surface (1949).	43 6 02	602 0630

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MADRAS

New Allies of the Farmer

One day, not long ago, in the brilliant glare of the morning sun, President Rajendra Prasad walked unconventionally, spade in hand, and turned up clods of silt in the 60-year old Nangloi drain, which travels through nine villages in its twelve-mile stretch. The day was June 6, 1951, the place Shahibabad, a village 15 miles away from the Capital, and the occasion, inauguration of the first recruitment centre for India's Land Army.

There was more than what met the eye in that simple Presidential gesture. It was at once the birth of a new concept in which a volunteer army of selfless workers would spark, in a co-operative effort, an agrarian renaissance, and a simple effective remedy to cure the malaise of rural India.

India's Land Army seeks to achieve "Land Transformation", that is develop all the available resources of land, water and livestock to the maximum, and to assure the rural people a decent standard of living. Its members have to stimulate the necessary enthusiasm among the rural population towards the development of agricultural extension work, by continuous contact with the farmers.

The work includes improvement of, and efficiency in, agricultural production. The Land Army, as an ally of the tiller of the soil, will take in its stride even such personal aspects of village life as that of developing the savings habit in rural areas.

Regulars and Auxiliaries

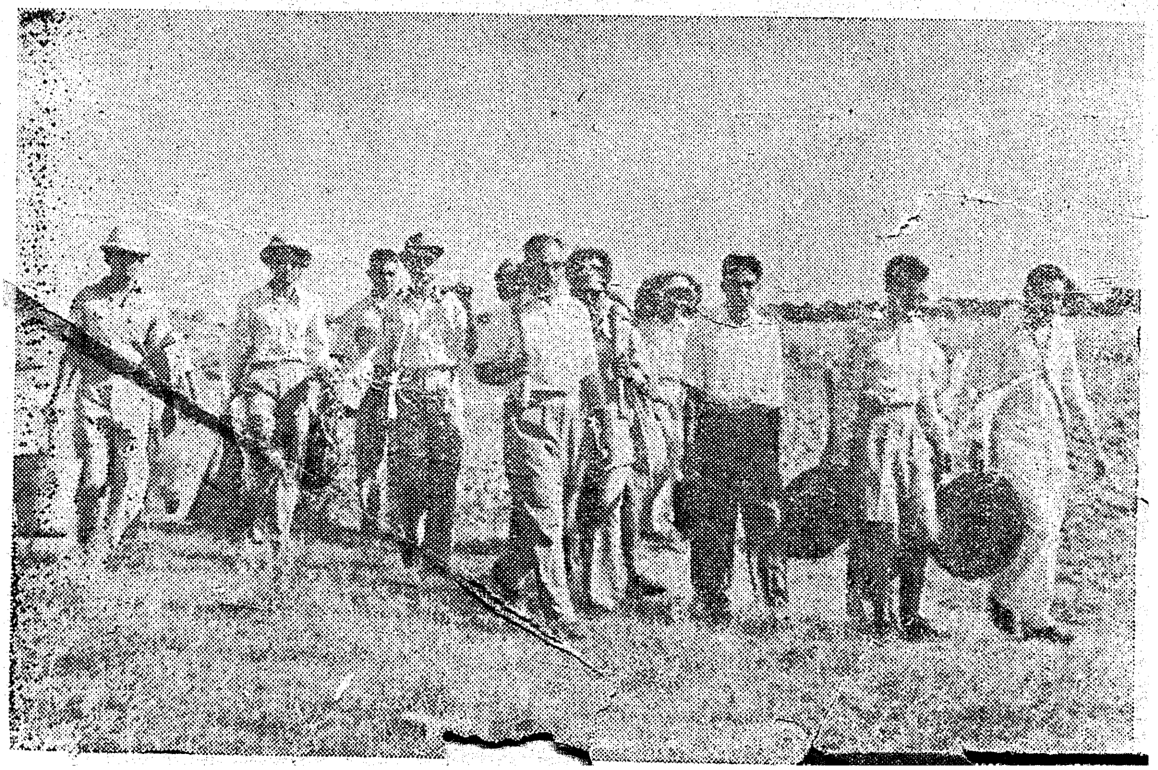
The band of non-official workers of the Land Army will work the extension schemes in the villages. On them devolves the task of undertaking studies of agricultural conditions, the formulation of recommendations for rural development.

In India's Land Army comprise two types of personnel, the Regulars and the Auxiliaries. The first come from the rural population, especially from those connected with agriculture and allied occupations. The Auxiliaries are recruited from all classes of the urban population from students of schools and colleges, Members of Parliament and other public-spirited men and women who offer their voluntary services for the betterment of village life.

The Regulars have round-the-year-work. They are entrusted with schemes which are designed to bring improved and better standard of living for the villagers. Within their purview come questions such as yield of crops, improvement of the fertility of the soil, use of better seed, better implements, care of cattle, control of pests, prevention of soil erosion, improvement of village sanitation and roads, tree planting, crops competitions, destruction of wild animals and plant protection measures.

In the case of Auxiliary members, the work is restricted to certain periods in the year of about six weeks. They work in units of not less than ten and not more than twenty-five per village or groups of villages.

The work of Auxiliaries is honorary, but their transport needs will be met. The essence of their services will be that they will actually work with their own hands on projects which come within their sphere. The schemes on which they will be employed will be seasonal, [illegible]



comprise one or more of the items of work done by the Regulars. Auxiliaries receive suitable training before they take on the work they are expected to do.

Training Centres

There will be different training centres in each State for the different categories. As far as possible, both Regulars and Auxiliaries are to be trained together. The training of Regulars will be seasonal and will be done with the help of agricultural and other extension service staff.

A district non-official organiser will maintain proper co-ordination between the two units of the Land Army. He will be the Executive Secretary of the Board of the district in which the District Magistrate will be the Chairman. Approval of lands for village improvement formulated by the units of the Land Army lie with the Board. Each State has a Director of Extension to co-ordinate the activities of the Land Army in the various districts.

For its central authority, the Land Army has the Governing Body of the Indian Council of Agricultural Research. The Commissioner of Extension at the Centre and the Joint or Deputy Director of Extension in the ...al Staff, and all official and non-official workers ...ected with agricultural extension work in the districts constitute the corps of officials, who will study circles, compare notes, and evolve the best methods for stimulating agricultural improvement.

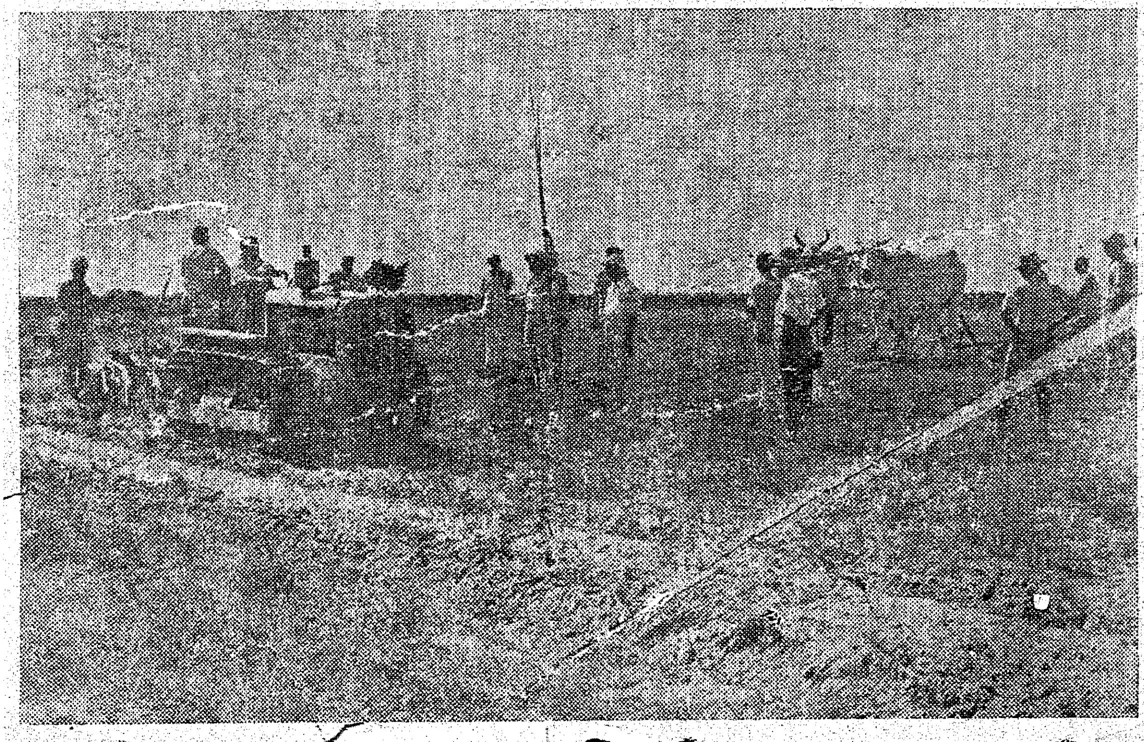
Post-Graduate Training Course in Soil Fertility and Rice Culture

A post-graduate training course in soil fertility, with special reference to rice culture, for the officials of the member-countries of the International Rice Commission, will be conducted at the Research Institute and Farms, Coimbatore.

The duration of the course will be about three months from the middle of July 1952 and would cover soil characteristics, with special reference to the paddy soils, the efficacy of various fertilisers with reference to soil and climatic conditions, techniques involved in designing and conducting field experiments on soil fertility in relation to rice culture. Some 20 to 30 officials of the member-countries in the South and South-East Asia are expected to take the training course.

The Madras Government will make available the existing facilities, including the required teaching staff. Sri K. Ramaiah, the Rice Consultant of the F.A.O., recently visited Coimbatore and Madras, to make preliminary arrangements in connection with the holding of the training course. It has been suggested that the training course should specially pay attention to the precarious conditions of moistures, resulting from droughts or unevenly distributed rainfall, which are becoming frequent in many parts of the world.

This action has been taken on the suggestion of the Government of India, made on behalf of International Rice Commission of the F.A.O.



...NG WASTE ...D: Land Army worl... 3-acre sandy, weed-infested plot in the ...age ...din Nagar. Tractor ... ...rk of ploughing.

1952 MADRAS

AGRICULTURE

Bumper Yields of Paddy Crop

Tanjore District

It is generally known that the yield from land can be increased by the adoption of improved methods of agriculture and better soil nourishment. It will be of interest to cultivators to know that six ryots of Tanjore District have secured bumper crops of paddy producing an yield of more than 6,000 lb. of paddy per acre. The methods adopted and yield obtained by these six ryots are described below :—

1. *Sri N. Swaminatha Athiamar of Vadaver* after sheep penning at the rate of 12,000 herd and applying 30 cartloads of cattle manure to his main field, gave ploughings for eight times and puddling for four times to the entire field and sowed Co-25 of improved paddy variety. He also applied 700 lb. of green leaves and 30 lb. of Ammonium Sulphate and 112 lb. of Superphosphate for top dressing the crop. By applying these methods he got an yield of 10,852 lb. of paddy per acre and won the District and Regional prize.

2. *Sri R. Ramani Iyer of Mayuram* after applying 30 cartloads of manure to his double crop land comprising 1·21 acres, sowed Co-25 of improved paddy variety. He also applied 75 lb. of Ammonium Sulphate a week before flowering and got an yield of 10,640 lb. of paddy per acre.

3. *Sri G. Vinayakasundaram Pillai of Thiruppanipettai* sowed Co-25 of improved paddy variety in his fields comprising 1·17 acres and after 25 days of planting and weeding, applied Ammonium Sulphate at 112 lb. per acre, Ammonium Phosphate at 100 lb. per acre and 320 lb. of groundnut cake per acre. He applied 112 lb. of Ammonium Sulphate per acre once 50 days after planting and secondly 75 days after planting. These methods helped to produce an yield of 10,476 lb. of paddy per acre.

4. *Sri S. Sappani*, one of the members of Land Colonisation Society of Kangampatti, after applying 40 cartloads of farmyard manure and after sheep penning at the rate of 400 herd for three times to his main field, applied two cartloads of *Kolinji* leaves and 20 bags of pig manure to his field and sowed *Vellaikodi* of paddy (ordinary variety). After transplanting the seedlings, he applied 224 lb. of Ammonium Sulphate. He also applied 320 lb. of groundnut cake during the time of weeding. These methods helped him to achieve an yield of 8,040 lb. of paddy per acre.

5. *Sri P. Kandaswami Mudaliar of Mariammankoil* after applying 15 cartloads of cattle manure and after sheep penning at the rate of 800 herd to his field, and giving four ploughings to the field, sowed Co-19 of improved paddy variety. He also applied 87 lb. of Ammonium Sulphate twice after transplanting, once 40 days after transplanting and second time 90 days after transplanting, as top dressing for the crop. The yield was 6,922 lb. of paddy per acre.

6. *Sri T. Venkatesan Pillai of Achalapuram* applied 200 lb. of bonemeal during the time of first puddling to his field. He also gave ploughing after applying 4,000 lb. of *Kolinji* seeds and sowed Co-19 of improved paddy variety. He applied 200 lb. of Ammonium Sulphate after removing weeds. He secured an yield of 6,410 lb. of paddy per acre.

East Godavari

Thirty ryots in East Godavari District are reported to have secured bumper crops of paddy. Among them seven outstanding ryots produced an yield of more than 5,000 lb. of paddy per acre. The methods adopted and the yield obtained by these seven ryots are described below :—

(1) *Sri Goli Veeraju of Peddapuram* after giving four ploughings to the main field and after goat penning and sheep penning at the rate of 300 herd for 15 days and applying five tons of cattle manure, sowed S.L.O. 18 (*Peddakitchilli*) of paddy variety. By applying these methods the yield of paddy was 7,900 lb. per acre.

(2) *Sri Bapiraju of Nayakampalli* gave four to five ploughings to his field and applied 7½ tons of cattle manure per acre. He sowed S.L.O. 18 variety of paddy. He got an yield of 7,700 lb. of paddy per acre.

(3) *Sri Satyanaryana of Kothanuru* gave five ploughings to his main field and applied pillipesara at 3,000 lb. per acre. He also applied Superphosphate at 90 lb. per acre and Ammonium Sulphate at 50 lb. per acre. He sowed a variety known S.L.O. 15 (pure seed) of paddy and transplanting was done one month after planting. These methods helped to produce an yield of 7,600 lb. of paddy per acre.

(4) *Sri A. Nataraju of Kakkavaram* gave six ploughings to his main field comprising 15 acres. He applied pillipesera at 25 lb. per acre six months before raising the nursery. Irrigation facilities from Godavari channel were obtained. He sowed *Akkullu* variety of paddy at the rate of 21 lb. in 10 cents. He transplanted the seedlings at a distance of 10 to 12 inches a part. By adopting these methods, the yield was 5,976 lb. of paddy per acre.

(5) *Sri B. Sathyanarayana of Razole* gave three ploughings to his main field comprising 50 acres. He applied 220 lb. of Ammonium Sulphate to his field. Irrigation facilities were obtained from Godavari channel. He sowed *Guttikichilli* (S.L.O. 17) paddy variety. The yield was 5,700 lb. of paddy per acre.

(6) *Sri G. Chandra Rao of Katamuru* gave three ploughings to his field and applied five tons of cattle manure per acre. He sowed pure seed of paddy S.L.O. 15 ; the yield was 5,700 lb. of paddy per acre.

(7) *Sri P. Veeraju of Nayakampalli* gave three ploughings to his main field and applied 5½ tons of cattle manure per acre. About 500 lb. of gingelly leaves were also applied to the field as manure. He then sowed S.L.O. 18 paddy variety. He secured an yield of 4,700 lb. of paddy per acre.

Renovation of Tanks

The Government have sanctioned the carrying out of repairs and renovation to 25 tanks, for irrigation purposes, at an estimated cost of Rs. 2,21,610, in the districts of North Arcot, Tirunelveli, Salem, Ramanathapuram and Nellore. An additional extent of 1,079 acres will be benefited and an additional yield of 540 tons of foodgrains is expected, as a result of carrying out the repairs.

Role of the Farm Mechanic

By JOHN HARRIS, of the *Farmer and Stock-Breeder*, London

Recent years have seen the number of tractors in Britain rise from 55,000 in 1939 to 330,000 at the last census in 1950. In point of machinery per acre, England has become the most highly mechanised country in the world. These years have seen also the emergence of a new group of workers in Britain's farmlife—those who drive and tend the tractors and other machines.

That is not to say that farm mechanisation is something born of the last decade, for it has steadily developed over the centuries from the day primitive man invented his first-hand machine, and in any event farm tractors were being made in Britain 50 years ago. But it was the overriding need for more human food, and the consequent ploughing up campaign which came with the war, that gave such a fillip to mechanisation as to cause a virtual revolution in farm technique.

The work of such old-established callings as cowman or shepherd vary little from farm to farm, but there is less rigidity and more variety in the pattern of the newer mechanised farming. In giving an idea of the work of the farm mechanic, the first necessity is to make it clear that this term does not always mean exactly the same thing. The true farm mechanic is a man fully trained in those repairs to implements and tractors such as can be carried out in the farm workshop, and in the setting, care and maintenance of machines. That means a basic training in fitting, welding, electrical work and so on.

Training

The farm mechanic will almost certainly have the responsibility for everything mechanical on the farm, including even the farm car and the lawn-mower. In addition to his normal work he will be expected to do a certain amount of carpentry, to undertake such things as fitting water pipes and bowls, and a dozen other jobs from making latches for field gates to helping his boss design and erect some particular kind of grain store thought to be suitable for conditions at that time.

After his basic training, the mechanic may well have specialised in a particular range of implements, for the trend in Britain today is to standardise in machinery of one manufacturer. The old idea of the tractor maker having little interest in the implements is gone, and we have today implements "tailor-made" to a tractor, from the largest plough to the small bare machine.

The farm mechanic may obtain his training in a variety of ways. A good deal is now being done to provide better educational facilities for the technicians of mechanised farming, both the operators and mechanics on the farm and the engineers, field servicemen and mechanics of the agricultural engineering industry itself. The likelihood is that the farm mechanic of today received his training with an agricultural engineering firm. Such a mechanic is, in effect, a development out of the village blacksmith. The firm will have the agency for one or more of the big manufacturers, who have in turn their own training schools where the dealer's men may be trained.

Manufacturers' Courses

Some manufacturers also run courses for machinery operators from farms. Then the Rural Industries Bureau has for some years been running courses which cover welding technique, implements repairs and bench fitting. Similar training has been provided under the Government Vocational training schemes, hitherto for ex-servicemen but now to be open to others. The Rural Industries Bureau also has field instructors who cover certain areas, giving lessons in implement repair work.

Certain farm institutes are now devoting special attention to training in power farming, and at least one has a year's course in farm machinery, to be taken after a general agriculture course and designed primarily to train farm mechanics.

Consideration is now being given to establishing standards of qualification for the various specialists in the rapidly developing industry of power farming. At the top of the scale it is now possible to take a degree in agricultural engineering at Durham University; the Institute of British Agricultural Engineers has recently issued its first certificates of proficiency to machinery operators (jointly with a County Education Authority) and has also introduced a diploma in agricultural engineering. To its existing certificate for blacksmiths and general mechanics the City and Guilds Institute may decide to add a more advanced standard which would cover the farm mechanic.

Full organisation of training facilities and proficiency standards for farm mechanics, as well as all the other grades of specialists within the agricultural engineering industry itself, are in course of development. Experience has indicated what is required.

Of this, however, there is no doubt, power farming in Britain offers tremendous opportunities. For, as mechanisation proceeds further, the more vital than ever becomes the role of the mechanic in this farming revolution which has taken so much of the drudgery out everyday work on the farm. In ten years also, wages have been doubled, hours of work decreased and holidays with pay established for all regular farm workers. (B.I.S.)

Village Roads

A total length of 111 miles of road, out of a target of 151 miles, originally sanctioned, has been completed in 52 villages in Tiruchirappalli District, at an estimated cost of Rs. 3·99 lakhs.

L.C.E. Diploma Examination

The Government have directed that holders of the Minor Irrigation and Road Construction Diploma of the Annamalai University, who have put in two years service, in the aggregate, in the Public Works, Highways, Revenue or Electricity Departments or such other approved service, be permitted to appear for the L.C.E. Diploma Examination, conducted by the Technological Diploma Examination Board, Madras.

Holders of the Minor Irrigation and Road Construction Diploma of the Annamalai University, who do not possess two years experience, will be permitted to appear for the examination, after completing two [illegible]

...din Nagar. Tractor ... rk of ploughing

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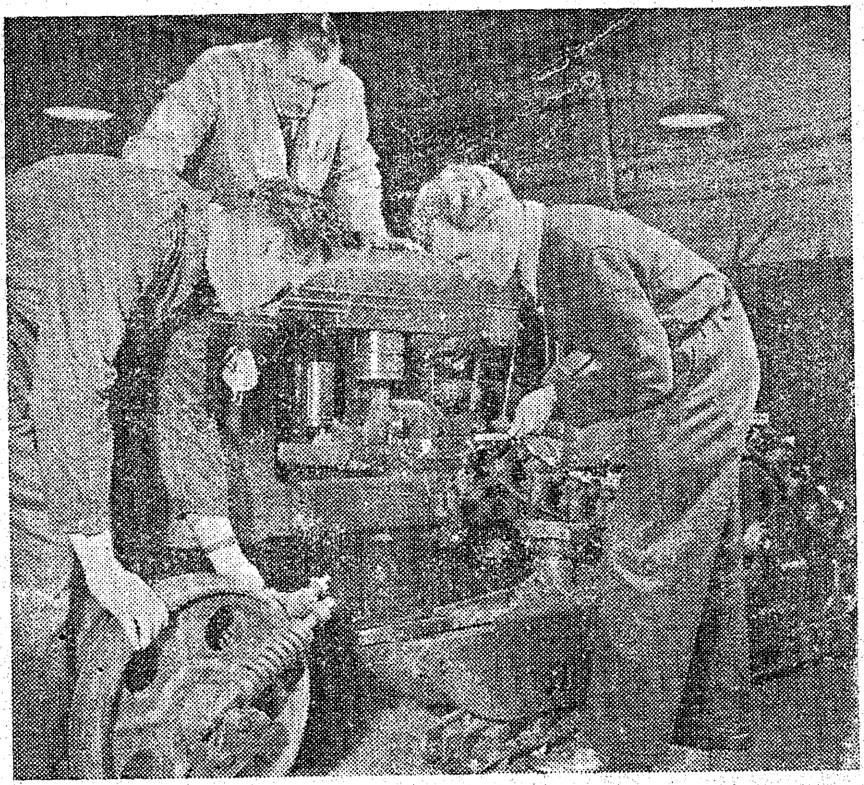
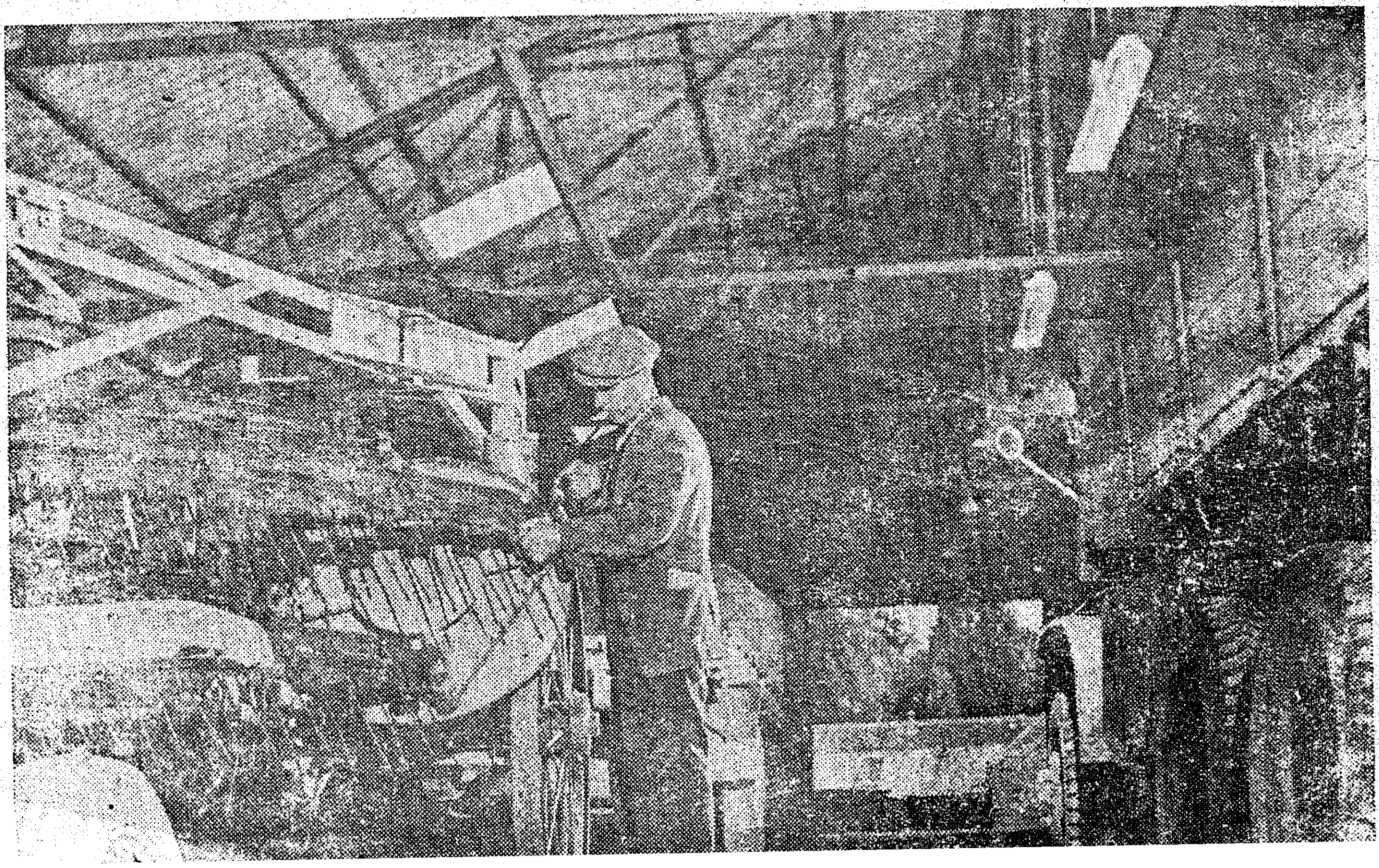
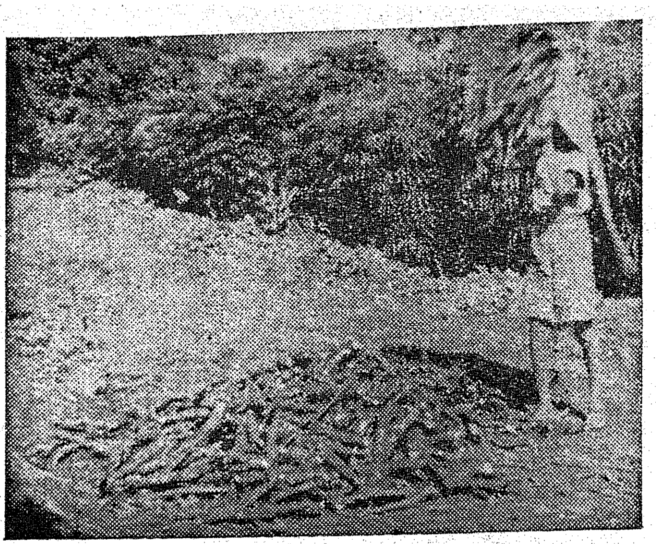


FARM MECHANIC TRAINEE LEARNS HOW : Farm students at the tractor repair section of the United Kingdom Government Training College at Letchworth, in the county of Hertfordshire, being instructed in the assembling of a track tensioner wheel of a track laying tractor.

THE FARMER AND HIS TOOLS : Britain has become the most highly mechanised farming country in the world from the point of view of acreage. Here Mr. Francis Balfour, whose family has been farming in the Strathardle district, Scotland, for 400 years, is seen in his fluorescent lighted implements shed.



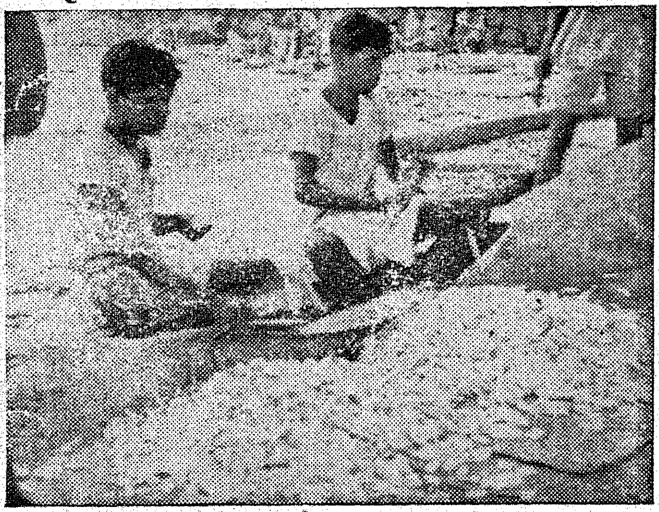
TAPIOCA FOR FOOD AND FODDER

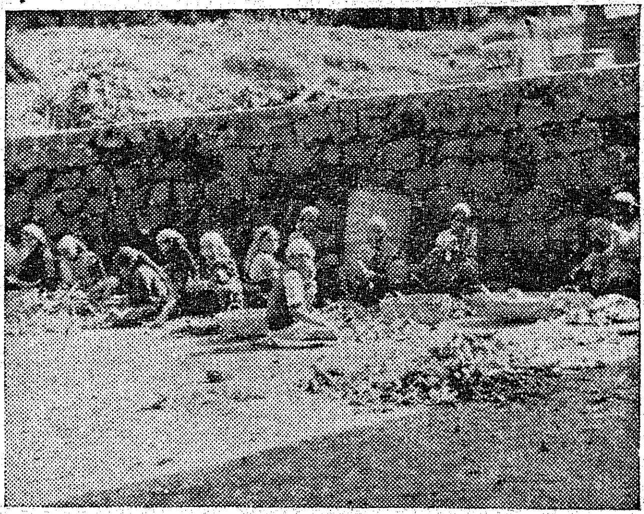


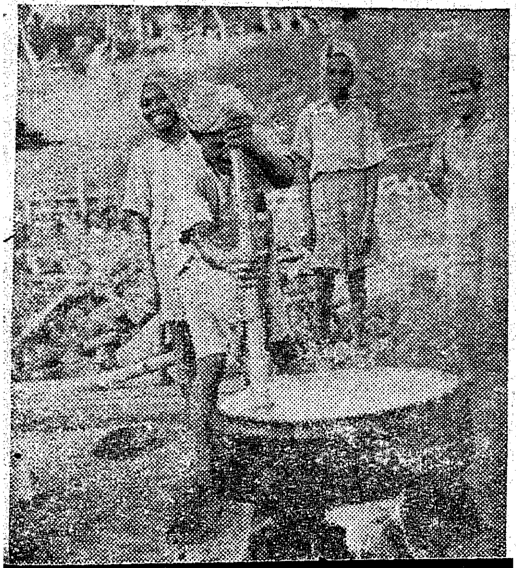
Left : *A fully grown Tapioca plant.*

Right : *Collecting the Tapioca bulbs.*

Centre, left and right : *Cleaning and cutting the bulbs into small pieces. Both men and women are busy on the job.*



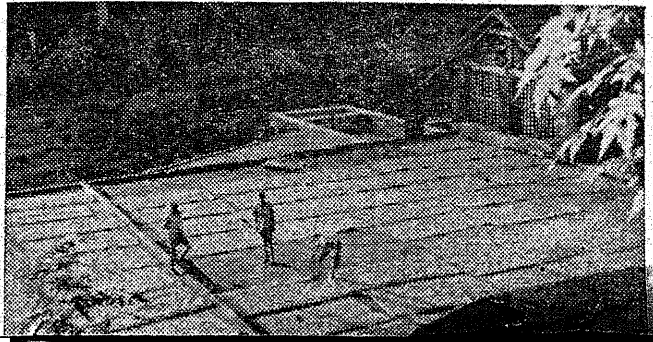




Left : *The chips are then boiled for about ten minutes.*

Right : *The boiled chips are spread on the mats and dried in the sun. The chips are then stored in gunny bags for powdering purposes.*

These photos were taken at Gundukutty (Coorg), where Sri G. M. Manjunathayya grew the Tapioca plants in an area of six acres.



Food from the Land

By B. A. KEEN, F.R.S.

Dr. B. A. Keen is a Fellow of the Royal Society and Director of the East African Agricultural and Forestry Research Organization, with headquarters at Nairobi, Kenya. He has travelled all over the world to report on the scientific, technical and administrative problems in agriculture.

The emphasis rightly placed on agriculture as a way of life often obscures, and sometimes ignores, the even more important point that it is also an industry. Much has been written about the danger to national welfare of a decaying or derelict rural community in an industrialised nation. At the other end of the scale, greatly increasing attention is being given to the formidable problem of raising the agriculture and living standards of the backward peoples still existing in an economic environment that is essentially similar to that of Western Europe before the advent of the Industrial Revolution. But, in the industry of agriculture, just as in any other industry, no improvement, great or small, can be permanently absorbed unless it is economically sound. It must offer increased returns for the same expenditure of money or effort, or reduce the expenditure for a given return. Very often it is expedient, or even necessary, to introduce the improvement on an uneconomic basis, by the inducement of an open or disguised subsidy or bonus; but, sooner or later, it will disappear with the termination of the inducement, unless it is economically sound.

Agriculture, as an industry, is open to all scientific improvements and by its very nature, makes wider call on the various branches of science than does any other industry. Steel making, for example, rests primarily on physics and chemistry and their daughter-science, metallurgy, whereas, in agriculture, the whole of the biological and non-biological sciences are directly needed in soil, crop and animal problems. In addition, problems lying on the boundaries of two or more sciences are of the greatest importance. This applies specially, but not only, to mixed farming or animal husbandry; in these matters, team work by groups of researchers trained in widely differing sciences, e.g., animal physiology and physics, is usually required.

Scientific Improvements

In general, the introduction of scientific improvements into agriculture implies a sequence from the laboratory to the field which is divisible into three stages. First, basic or fundamental research; secondly, technological investigation; thirdly, introduction into practice. Each requires its own special type of practitioner, but each stage is equally important. There are formidable problems for both scientists and administrators in securing an uninterrupted flow through the stages from research to practice, as well as the equally necessary reverse flow by which new or changed practical problems can quickly be brought to the notice of the technologists and the research scientists for investigation.

There is no greater need at the present time than the scientific study of those obstacles; the new sciences of anthropology, sociology and psychology enter as importantly into agricultural betterment as do plant breeding and genetics. Even though the prosecution of fresh agricultural research remains as a necessary insurance against future perils, it cannot be doubted that, over the next ten or twenty years, the immediate need is to introduce the technical and economic improvements that are already available from the results of past research. This implies a study, with the aid of these newer sciences, of the obscure obstacles that hinder, and often prevent, their adoption.

Plant Nutrition

Agricultural science in its modern form can perhaps be dated from Liebig. Liebig's researches on plant nutrition led him to the confident conclusion that plants obtained their nitrogen and carbon from the air and that a manure need contain only the mineral ingredients found in the analysis of the plant ash. The investigations of Lawes and Gilbert led directly to the now universal use of artificial fertilisers and, in their own lifetimes, to a spectacular increase in yields. Without doubt, it is the greatest single contribution so far made to agricultural science and practice. One incidental but vital result of their work was that they developed the only possible technique for successful agricultural research—the intimate association of laboratory work conducted by research scientists with field experience designed to test their results on a practical scale.

This combination of science and practice is so self-evident to us today, after nearly a century of use, that we are apt to overlook the great advance that Lawes and Gilbert originated. Their field experiments were simple, even crude to our modern eyes. It is only in the past twenty-five years that R. A. Fisher, working at the Research Station at Rothamstead, developed the theory of the mathematical-statistics of small samples, which has revolutionised the design and analysis, not only of field experiments, but of biological experimentation in general. These methods have been generally adopted in Great Britain, and the Commonwealth and Colonies, and in the United States and many other countries.

Nutritive Elements

Chemical analysis and plant physiology with, later, the use of statistical technique in the design of pot-culture and field experiments, have produced steady advances in our knowledge of plant nutrition. The simple conception that nitrogen, phosphorus and potash nutrients are essential has been extended in several directions. Plant physiologists have investigated the period, or periods, of plant development at which particular nutrients are most necessary, and their findings alike led to practical recommendations on the time of application and amounts of manure, notably in the case of cotton. The earlier knowledge that other elements besides nitrogen, potash and phosphorus entered into plant growth has been greatly extended by the discovery of the importance of "trace elements"—required in the most minute proportions and essential for proper development, but often lethal if the minute percentage is exceeded.

There is no sharp line between elements required in quantity and those needed only in traces. Many elements

are required in varying amounts—calcium, silica, magnesium, manganese, iron, sodium, cobalt, nickel, etc. The functions of some of these is fairly well known, e.g., iron, in the formation of chlorophyll, and magnesium as one of its constituents. Magnesium is also associated with oil formation; oil seeds contain more of this element than starch seeds do. Some of the substances seem to be relatively inert; others, in excess or in deficiency, cause serious injury.

Although the knowledge of plant nutrition is not complete even in major directions, and will not be for a long time ahead, a large body of facts and restricted generalisation is now available. In the case of fruit trees, for example, a valuable series of relations between colour and morphological characters of the trees and deficiencies of a number of elements have been worked out and used in practice. Diagnostic aids, such as injection and leaf tissue tests, and X-ray and spectrographic examinations now afford a wide cover of the experimental field. Recently, developments in atomic physics have placed a powerful new tool in the hands of agricultural scientists. Radioactive isotopes of phosphorus, carbon and other elements of importance in plant nutrition can now be prepared, and their movements in the plant can be traced easily by electrical means. This work is in its preliminary stages, but it has high promise. The movements of elements of vital importance such photosynthesis, storage, maturation, etc., are often in minute quantities that chemical analysis is difficult or impossible; in addition, every such analysis involves the mutilation or destruction of the test plant.

The above discussion has dealt mainly with the aspects of plant nutrition concerned in yield, or quantity of produce. But equally important, although perhaps less urgent, is the question of the quality of the produce.

Quality Factors

Quality bears both on the nutritional value and palatability of foodstuffs and on the improved receipts obtainable for better class produce. With cash crops for industrial use such as textiles, certain quality factors as strength and length of fibre can be accurately defined by the industry and agricultural scientists can direct their manurial and plant breeding work towards these clear objectives. With food crops, including beverages, the trades have devised a number of tests for quality that are used not only in blending or grading the produce for the consumer's market, but also for fixing the price received by the grower. The tea-taster and the coffee-liquorer are well-known examples. Although the tests usually contain some quantitative elements, their most important aspects deal with elusive factors such as 'body' and 'aroma', that are essentially subjective and acquired only by long training and experience. As long as this continues the growers and agricultural scientists are severely handicapped in their endeavours to raise the quality of the produce. There is a real need for biochemical and related investigations into these subjective quality factors so that—as in the simpler example of cotton—they can be expressed in more objective terms.

For food crops in general there is a general association between quality factors and the three main nutrients, nitrogen, potash and phosphate, at any rate for temperate climate conditions.

Nitrogen manures, besides giving a marked increase in yield, promote rapid vegetative growth and are therefore useful for those crops where a good bulk of tender leafy growth or succulence is desired; examples are cabbages, and grass pastures for animals. In the latter example considerable research and practical trials have been made to extend the supply of young leafy herbage throughout the growing season.

Phosphatic Nutrients

Phosphatic nutrients are generally held to promote maturity and ripening and to give a good root development. In products in which the vague but recognisable maturity factors associated with 'quality' are important, there is an association of vintages for different years differed little from the order of their phosphate contents, which diminished progressively from the best to the poorer wines. The effect of phosphatic manuring on root development is particularly noticeable on heavy soils where roots do not naturally form well; but on lighter soils, although these usually contain less available phosphates, phosphatic manuring is less needed since the physical condition of the soil facilitates good root development. Its effect on root development revolutionised arable agriculture on heavy clay soils; its effect in hastening maturity enables an earlier harvest to be taken in areas of early and heavy autumn rains, as in the western and northern districts of Great Britain. Hence the limits of growth of several crops have been appreciably extended in a number of countries.

Potash nutrients are considered to be associated with certain quality factors, especially in relation to market, garden and fruit crops, and more general farm crops such as potatoes and sugar-beet. The effects are believed to be bound up with the amounts and composition of the plant sugars, although, in practice, more importance is attached to the acid radicle of the potassic manure than to the potassium itself.

Potassium has a marked effect on leguminous crops. Where they are growing in competition with grasses, as in a pasture, they are depressed unless any potassic deficiency is set right by manuring. Conversely, in a pure stand of a legume, e.g., a lucerne crop, the winter hardiness of the crop is enhanced by potassic fertilisers.

Increased Productivity

A review of world agriculture over the past fifty or hundred years discloses a great increase in the total production. Part of this was due to an increase in the cultivated area by the opening up of virgin lands, notably by the flocking of immigrants to the United States. But a very appreciable factor in increased total production was general raising of the yield per acre, achieved by improvements in the plants themselves and in their cultural conditions.

Plant improvement by selection is as old as agriculture itself and its effects have been enhanced with the coming of the science of genetics. The yield of sugar-beet has been raised in a few decades from a ton or so per acre to 10-15 tons, and its sugar percentage has also been greatly increased. Even more striking, because of the relatively short time taken in the work, is the development of sugar-cane varieties by the Dutch in Java, with yields of many tons of sugar per acre. The tomato has, in our lifetime, been changed from a plant that was sometimes grown for the pleasing colour effect of its bright red fruits clusters, to one that gives, even in the open, 5 lb. or more of edible fruit, and under glass-house conditions several times that quantity.

In the space of a generation new varieties of wheat have spread over millions of acres, one outstanding example being Marquis wheat in Canada. The selection or breeding of varieties possessing some special features such as hardiness, a shorter growth period, or stiffer straw in cereals, has led to important changes in the areas under staple foods. In the United States the upper boundary of maize growing has been pushed steadily northwards into the wheat belt, which, in turn, has extended northwards into areas where, a few years ago, no variety of wheat then known could have reached maturity in other than exceptionally favourable seasons.

Cultivation

Soil cultivation is one of the oldest arts in the practice of arable agriculture. Beginning in the mists of antiquity with a pointed stick, the implements slowly evolved through hard-hoes to large models drawn by animals. These remained cumbersome and crude in design until the Industrial Revolution. The Industrial Revolution provided the designing and engineering skill to produce efficient metal implements to perform a variety of operations that their predecessors were incapable of doing well: subsoiling, deep ploughing, inter-row cultivation all improved in efficiency, and soil tillage became a highly developed art. Steam power was applied to cultivation, especially for the ploughing by contract of large fields on the heavier soils. Finally, the invention of the internal combustion engine resulted in the almost complete mechanisation of arable agriculture in the more advanced countries.

One fundamental consequence of this change is not yet fully appreciated. In the days of animal-drawn implements, especially before the implements were of efficient design, frequent cultivations were necessary to obtain a satisfactory tilth and to cope with weeds. The actual cost of extra cultivation to the farmer was negligible, for the animals had to be fed whether they were working or idle. The tractor, unlike the animal, costs nothing when idle, but each time it is used, there is a cash expenditure on fuel and oil. Hence the economics of mechanised agriculture must be based on finding the minimum tillages for good farming. The tractor-farmer cannot afford, like the horse-farmer, to be an artist in cultivation.

Further, field experiments in a wide variety of soils and climates have shown that crop yields are remarkably insensitive to cultivations. Deep ploughing and subsoiling, that were commonly believed to be especially necessary for root crops, are generally without effect.

Rotary Cultivation : Dry Farming

Two developments in cultivation methods are of some interest. One, known as rotary cultivation, is based on the use of revolving tines to comminute the soil so producing a seed-bed in one operation, and saving both time and money. Comparisons of the method with the normal operations show that the new method has still to overcome certain difficulties.

The second development is being tried in dry-farming areas where conservation of soil moisture is specially important. It aims at disturbing the soil as little as possible, i.e., at obtaining the necessary friability for seeding operations without inverting the soil, thus avoiding the moisture loss by evaporation that occurs when the lower damper layers are brought to the surface. It is a kind of sub-surface cultivation such as would be done by a plough share, only without the mould-board. This exercises a lifting action on the soil above the implement and disintegrates it. Trash and vegetable debris are left on the surface where they can act as a hindrance to evaporation and the seed is sown through the trash by drills of modified design.

One unexpected but very important result that has emerged from this work concerns the effect of weeds on crops, when both are in the early growth stages. The normal sequence of good farming is to encourage weed seeds to germinate during the preparation of the seed-bed, so that they can then be killed in the seedling stage by a light surface cultivation. Thereafter, inter-row cultivations are given whenever later growth of weeds becomes noticeable until the crop has grown too big to admit the passage of implements. A tall crop or one that spreads over the ground can be expected to smother and thus keep in check any later weed growth; after harvest they grow again and are dealt with by suitable cultivations.

In more advanced systems, weed control by implements necessarily produces a soil mulch in the operation, and for the reasons given above, virtues were ascribed to the mulch itself. This was especially so in intensive farming and in gardening, and a standard injunction in many text-books on gardening was 'keep the hoe moving among the plants.' Now that it is known that the real purpose of the operation is weed control and that the mulch is merely an incidental consequence, the question arises of controlling weeds by other means than by cultivations. Already chemical control is used in certain cases.

Manures and Fertilisers

The second broad division of cultural improvements deals with the enhancement of soil fertility by manuring. It is instructive to review briefly the historical development, because obstacles long since overcome in some countries still exist today in others.

The mediæval 'three-field' system that lasted so long in Western Europe was, in essential, as follows. It was a three-course rotation of wheat, barley and fallow. The fallow was necessary as a resting period when it was hoped that the land would recover somewhat in fertility after the two straw crops. The fallow field, like the two undercrops, was very weedy for the reasons discussed above, and it was used together with weedy post-harvest stubbles of the cropped fields, as grazing for the animals, to augment the common land grazing. It therefore received a certain amount of organic manure from the droppings of the animals. Crop yields were low, and there was no possibility of raising them within the framework of the system; it seemed to have reached finality, and the precarious margin between a meagre sufficiency of food and actual want, for both human and animals, had to be accepted.

Enclosures

The enclosures represented the social and economic changes from the old three-field system. In theory, there would have been no insuperable difficulties in bringing about the technical changes just outlined within the framework of the existing system of land utilisation. The biggest obstacles would have been the universal custom of allotting

each year strips within each field to each cultivator, and the practice of giving common ranging to the animals. The practice of strip cultivation arose from the desire to give everyone his fair share of the better and poorer areas, but it was cumbrous at the best and was economically indefensible. The common ranging of the village herds and flocks not only restricted the arable work in various ways, but also made impossible for all practical purposes, any attempt to improve the quality of the animals. Much has been written about the motives and effects of enclosures, and the sociological consequence of the movement. In essence, it replaced communal ownership by private possession. In doing so it created a class of landless peasants, who became paid labourers on the private farms.

This brief outline of past changes has urgent topical importance. In many parts of the world land utilisation customs still exist, that closely resemble the three-field system, notably in the Middle East; in North-East Syria, strips only a few feet wide but over half a mile long, are not uncommon. Elsewhere, and especially in India, as well as the Middle East, the fragmentation of holdings among heirs under the laws of inheritance produces grave technical and economic handicaps to farming.

The four-course system showed the manurial value of dung and the means of producing it in adequate amounts. It also showed the value of organic manure as a soil improver; it improved the physical condition and its moisture relationships and, especially on heavy soils, reduced the difficulty of getting a good tilth. It was natural, therefore, that the deficiencies of agricultural systems abroad, especially in sub-tropical and tropical climates, particularly poor yields and soil erosion, should be ascribed to the very low quantities of organic manure given to the soil. It has only recently been realised that the problem is not as simple as that.

Climatic Conditions

The present position, therefore, is that the nutritive elements in farmyard manures become more quickly available in tropical than in temperate climates; that, in the wet tropics, more may be lost by leaching; that, in the sub-humid tropics a marked accumulation of available nitrogen is built up in the dry season; and that, especially in sub-humid conditions, there is much more rapid oxidation of organic matter and a much longer equilibrium humus content than in temperate soils.

Whatever the precise part to be played by organic matter in such improved systems, there can be no doubt that artificial fertilisers will also be used. They have been employed in ever-increasing amounts since the first artificial fertiliser—superphosphate—was put on the market by Lawes a century ago, as the result of his field and laboratory work on phosphates more highly available to plants.

There is likely to be some intensification of the objections urged against the use of artificial fertilisers. The prejudice that still exists in certain quarters against them arises partly from the obvious ill-effects of their misuse and partly from the school that believes they lack certain essential properties that only organic manures can possess. This latter belief is an elaboration, sometimes in pseudo-scientific terms, of the simple and customary difference in nomenclature between the two forms; organic manures are therefore claimed to be 'living', 'natural'; 'soil poisoners'. These postulated differences are projected into the food value of the crops and animals; those on organic manure are health giving, those that come from artificial fertilisers are the source of most human ills.

Plant Improvement

Plant breeding aims are, in general, the improvement of yield and of quality, and the production of varieties having immunity or enhanced resistance to pests and the diseases. There is also considerable scope in the production of varieties specially suitable for a given environment of farming system, e.g., a stiff, short straw for combine-harvesting of cereals and a shorter growth period for use in higher latitudes.

Marked advances have been made in producing better varieties of temperate zone crops, and animal fodders are obvious examples. In the tropics, spectacular improvements have been secured in certain crops grown in the plantation type of agriculture and, in some instances, of peasant agriculture where large areas can be farmed on a uniform system. An example of the latter is paddy-rice in countries such as Malaya and Burma, where the introduction of better varieties has much improved the yields. In plantation agriculture where the main object is to produce a cash crop, which may be for human or industrial use, coffee, cocoa, tea, cotton, sugar, rubber are well-known examples. Progress has been made by using breeding or selection methods, by vegetative propagation, by the introduction of varieties from abroad for direct use or for cross-breeding.

There is no doubt that the biggest gap at present is the lack of plant-breeding work on the staple food-crops of tropical peasant farming.

Tillering

One important aspect of plant breeding for sub-humid tropical conditions must not be overlooked. The tillering habit of grain crops is advantageous when the soil moisture is adequate to sustain the larger plant to maturity. The Chinese, in their successive transplantings, obtain wheat plants with a large number of tillers that produce mature heads. But, as noted at the end of the next section on Soils, tillering is a disadvantage in sub-humid areas. Recent work on dry-land farming problems in India suggests that the environmental conditions have led to the predominance of non-tillering varieties, and that the peasant, by rudimentary selection of seed, and possibly by his custom of sowing seed thickly, has encouraged this process.

In breeding against pests and diseases, the standard procedure is to bring in, if possible, the factor of immunity of high resistance by normal genetical means into otherwise desirable varieties.

Breeding and selection have been, and will continue to be, valuable tools in the fight against plant and disease pests. Important additional help comes also from changes in cultural practices that are suggested by a knowledge of the life history of the disease agent.

Insecticides

But possibly the main method, especially with cash crops, is the use of insecticides or fungicides in a variety of ways; as dressings for seeds before sowing, on the plants, as winter and summer sprays for fruit trees and so

at the most susceptible stage in its life history. In recent years marked advances have been made in the introduction of potent chemicals, both natural ones such as rotenone from derris and pyrethrum, and synthetics. Modern methods of applying them over a wide area have been developed, such as smoke candles and spraying or dusting from aeroplanes. Efficiency and costs per acre have been both favourably influenced. Here, however, there lies a danger that requires careful investigation. There are beneficial and harmless insects as well as harmful ones. Some are pollinators, others are predators and parasites of harmful insects.

There is, normally, a biological equilibrium between the various species, and a comprehensive reduction by a potent insecticide to deal with some outbreak, may, besides destroying many beneficial insects, change the biological equilibrium in an unfavourable manner, thus bringing in some fresh problem in place of the older one. A further aspect of some importance is that among the individuals of a given pest, there may be a few of a strain that has, or develops, a high degree of transmissible resistance to the insecticide. After the marked reduction in number due to the initial applications, these survivors will quickly increase their numbers, and restore the *status quo*, only in a more intractable form.

Besides destruction by chemical means there are also opportunities for biological control of a pest that owing to the absence of its natural predators or parasites has flourished beyond bounds. Such cases usually occur when a new crop is introduced into a country and is extensively grown, and there are a number of well-known examples of complete control of the pest by the introduction, breeding and operation of its natural parasites. Attack by vermin and pests affects both the modern and the traditional type of storage. With modern types the task is made easier by developments in the design of storage buildings and materials used in their construction: angles and corners are avoided and hard smooth surfaces are provided. Thus prevention can be fairly complete.

Soil Classification

In the past twenty-five years great advances have been made in our knowledge of soils from the viewpoint of their genesis and classification. The general diffusion among soil scientists of the pioneer Russian work on the influence of climate in forming soil zones, and on the ecological aspects of these zones, provided a synthesis of a mass of apparently unrelated facts.

Marked progress has been made with soil classification and survey by these criteria and methods in Europe and the United States of America, but not in tropical and sub-tropical regions. It is now realised that there are big differences between soil formation under tropical and temperate conditions, and that the classifications suitable for the latter will not apply to the former, although the fundamental scientific principles still apply. Tropical soils are usually acid in reaction, except when formed from limestone, and weathering is much more rapid. Considerably more investigation is needed before a scheme can be created suitable for tropical soils and within the framework of a worldwide system.

Problems of soil maintenance in tropical soils have, in the past, been approached on the analogy of temperate soils; hence the insistence on increased organic manuring.

It appears that under the rotation of arable crops and grass ley, the fertility of the soil can be maintained at its present level. The problem of increasing the fertility has still to be solved, probably by the development of some form of mixed farming. This will have to be coupled with manuring because animals take from the land in meat and milk some plant nutrients, and only the balance is restored in their dung.

Erosion

In many areas these developments will give an increased liability to erosion and adequate preventive measures will be needed. Much has been written about the alarming spread of erosion as a result of increased land usage by a growing human and animal population, and the failure due to ignorance and lethargy to adopt suitable conservation methods required by the more intense utilisation of the soil. Erosion is, in general, influenced by four main factors: the method of land utilisation, the nature of the soil, the topography and the climate, and only the first of these, and to a minor extent the second, are within man's control. The understandable alarm at the obvious ravages of erosion and the urge to stop its spread by terracing, contour strips, watercourse control, etc., have rather obscured the important distinction between natural and man-made or man-accelerated erosion. The outlook usually is that erosion must be stopped wherever it exists, whereas in many cases it should be allowed to continue under control.

Where the land surface has an unstable topography, the forces operating to bring it to the new stability are irresistible. By suitable measures they can be checked for a time—occasionally for a long time—but sooner or later they must prevail. The more they have been checked, the worse (and probably the more sudden) the move to the inevitable new stability will be. For example, on slopes above a certain gradient (which gradient varies with the nature of the soil itself) where terraces have been built to stop soil down-wash and gullying, the soil inevitably builds up progressively at the outer part of each terrace at the expense of the inner part. Ultimately the terraces themselves may become unstable and slip down bodily in a landslide. Where this possibility exists there is little doubt that the better course is to accept the downward soil movement and to devise construction works that will merely control and not stop the movement.

In this connection it is of interest to note that native cultivators in a number of regions—India and the Aden Protectorate are examples—who are fully aware of the need for water-absorbent crumb structure in the soil under dry-farming conditions, have a general disinclination to use farmyard manure.

Hydrology

In temperate conditions, where evaporation is relatively low, the major agricultural problem is to encourage the escape of surplus water by percolation or drainage. In the wet tropics the problem is essentially similar, but over the greater part of the tropics and sub-tropics, evaporation is intense, and rainfall is often on the low side. Lack of water seriously affects both livestock and arable developments and points clearly to the need to make much more use of temporary surface water than is done at present.

Important as this utilisation of surface water is, it is only one aspect of the urgent technical problem which faces most tropical countries. This is to carry out a hydrological survey based on catchment areas, with the object

of assessing the surface and underground water resources, their inter-relations, and the possibilities of their conservative exploitation. The knowledge is as vital for agriculture as for industry.

Besides irrigation from surface waters, there is in the aggregate much use of underground water for irrigation. This ranges from the irrigation of a few square yards of soil with water from a single shallow well, to the extensive exploitation of an underground water table by pumping.

Land Tenure System

The peasant is imprisoned within the walls of his own agricultural system : year by year his numbers grow and the walls remain. The difficulties in attempting to break out are great. Except in areas where irrigation is possible, climatic conditions rule out any system of agriculture like the one now practised in climates with a well-distributed rainfall. The system has necessarily a low economic level, and the Government's income from taxes is insufficient to provide adequate agricultural and education services. There are no large industries to provide a big market for cash crops.

Admittedly the system, left to itself, could endure for a long time yet—at a cost : continued soil erosion ; periodic removal of surplus humans and stock by famines and pestilence ; the maintenance of high death-rates at all ages ; and the acceptance of mere existence as a standard of living. But it has not been left to itself, since the days of the first impacts and infiltrations of the modern Western Civilisation, and the results have been portentous. Great irrigation schemes, with modern knowledge available to avert soil deterioration, have provided large new fertile areas—and the population has rapidly bred up to them. Medical science has eliminated many debilitating diseases and they saved great numbers of lives and intensified the pressure of population on the land. Veterinary science has countered the devastating stock diseases—and now millions of extra animals compete for the already inadequate and poor fodder. Thus, although the husbandry may be kept going by the resources of modern science, they are often only palliatives, and the price for surmounting a current crisis is the probability of having to meet the same crisis, magnified, in the future.

Economic Farm Units

Clearly, there is some fundamental difficulty in this system of agriculture which turns the edge of improvements, even though they are of self-evident value and have given highly beneficial results elsewhere. The difficulty is, of course, the trinity of the land-tenure system, the fragmentation of holdings, and strip cultivation—all of which prevailed in Western Europe until enclosures replaced the communal field system by separate and self-contained farms.

No system of agriculture can be progressive unless the holding can be worked as a unit. The size is relatively unimportant provided it is an economic unit. It may be a collective farm covering thousands of acres, as in the Russian Kolkhoz and the Jewish Kibutz, or a small holding linked with others by a co-operative society, as in Denmark.

Food Offences and Punishments Awarded

During the fortnight ending August 31, 1951, 170 cases of prosecutions against food offences were disposed of in the districts of South Arcot, Chingleput, Chittoor, Madras and Nellore. The accused persons in these cases were people of all classes and most of them belonged to the poorer classes. Fines, ranging from Rs. 2 to Rs. 300 and sentences of imprisonment up to one month, were imposed.

In Madras City, Sri Desikachari, Proprietor, Bangalore Cafe, Pycrofts Road, Triplicane, was fined Rs. 300 for possession of others ration cards and Ghillel Sowcar, shopkeeper, Peravellore, was fined Rs. 200 for import of 45 measures of rice and 126 measures of wheat.

During the same fortnight, other departmental punishments, such as warnings, fines, forfeiture and enhancement of security deposits, cancellation of retail and wholesale licences, etc., were also awarded departmentally in 94 cases to persons who were dealing in foodgrains.

During the fortnight ending November 15, 1951, 462 cases of prosecutions against food offences were disposed of in the Madras State, except in the districts of West Godavari and Ramanathapuram. The accused persons in these cases were people of all classes and most of them belonged to the poorer classes. Fines ranging from As. 8 to Rs. 250 and sentences of imprisonment up to four months, were imposed.

In Visakhapatnam District, Ruthalakithayya, Nookarapu Paidayya, Bollam Venkayya Lalem, Tatelu, Masurapu Appalasamy and Pamu Satyanarayana were each fined Rs. 250 or rigorous imprisonment for four months, for illicit transport of rice through rationed area or without permits.

During the same fortnight, other departmental punishments, such as warnings, fines, forfeiture and enhancement of security deposits, cancellation or suspension of retail and wholesale licences, etc., were also awarded in 218 cases to persons who were dealing in foodgrains.

So long as the laws of land inheritance, the custom of family division of property, and the unrestricted sale of land endure, land settlement is a Sisyphean task, and the goal—the creation and preservation of economic farm units—cannot be reached. The longer an equitable solution is deferred, the more likely it is that the peasantry will be driven to the brusque alternative of an agrarian revolution.

(*Condensed from the booklet* Food and the People *published by the Bureau of Current Affairs,* 117, *Piccadilly, London-W.* 1—*A UNESCO project*).

A Bridge for the Cauvery

By SRI M. BHAKTAVATSALAM, Minister for Public Works

The Cauvery River was bridged only at Bhavani and Tiruchirappalli. These places are about 100 miles apart and the absence of a road bridge across the river at an intermediate point caused much inconvenience, since there was no direct communication between the districts of Salem and Tiruchirappalli. There is a good deal of traffic across the Cauvery between these districts now carried by means of ferries and coracles.

A bridge across the Cauvery at the Velur-Pugalur ferry has been a long-felt want owing to its heavy passenger traffic and equally heavy transhipment of agricultural and commercial products, connecting as it does the three important agricultural and trading districts of Salem, Tiruchirappalli and Coimbatore. The measure of traffic can be best understood by the index of the high return of Rs. 30,000 per annum which the Government are realising from the ferry at this point. It was also recognised that a bridge across the Cauvery in this area would be of importance not only with reference to the needs of the two districts of Salem and Tiruchirappalli, but also from a general view of the traffic requirements in the whole of South India, inasmuch as a bridge would open up an entirely new traffic route from Salem on the north to Dindigul and Madurai on the south and would thus be of great value to trade and commerce.

From Vipan's Scheme

The proposal to construct a bridge across the Cauvery in this area took shape in Vipan's Scheme of Road Development for the Madras Presidency which was tentatively drawn up in 1936. Mr. Vipan, who was the then Special Engineer for Road Development, had selected a site at Pugalur for the bridge. There were the usual conflicting claims regarding the site to be adopted. In deciding on the Pugalur site, the merits and demerits of five alternatives were gone into in great detail.

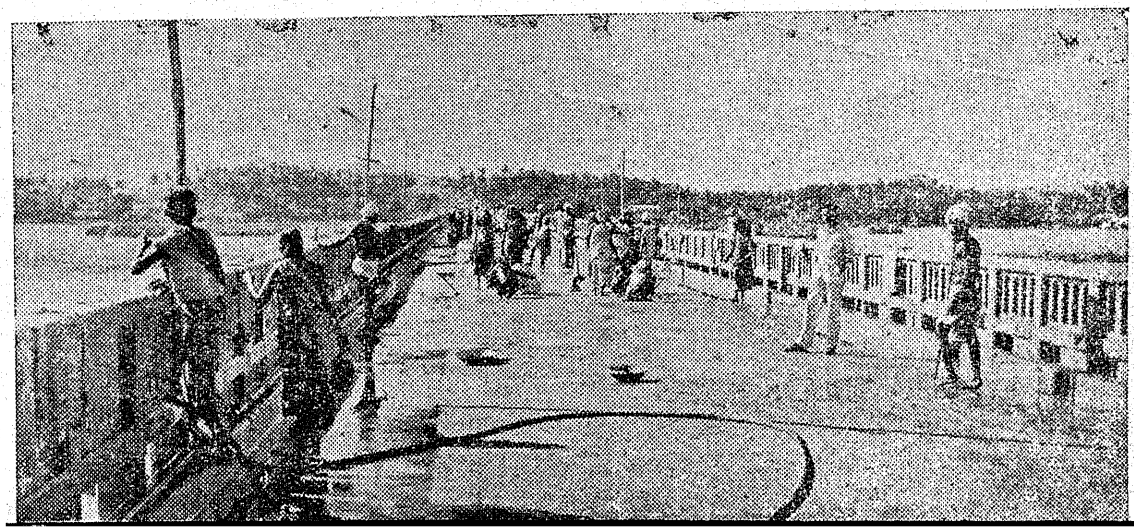
After thorough examination of the various aspects—the technical opinion of the successive Superintending Engineers and Chief Engineers, the economic and trade needs of the two districts, and the opinion of the various authorities concerned, viz., the District Boards of Tiruchirappalli and Salem, the Collectors of the two districts and the Agent, S.I. Railway, it was decided to construct the bridge at the Pugalur site as the great majority of opinion was in favour of this site. The preliminary survey and detailed investigation was completed in 1938, detailed estimates for a bridge with 48 spans of 60 feet with Pratt Truss girders and R.C. decking were prepared and the scheme was sanctioned for execution in 1940, but on account of the conditions creat d by World War II, its execution had to be postponed.

After the introduction of the National Highway Scheme, this bridge work was included in the Five-Year Programme of Post-War Road Development. The approved alignment for National Highway No. 7 (Benares-Cape Comorin Road) in so far as the three districts of Madurai, Tiruchirappalli and Salem are concerned, as one proceeds from south to north, is from Madurai to Salem via Dindigul, Karur and Namakkal.

Choice of Site

There was considerable discussion as to what alignment this National Highway should take between Karur and Namakkal—both obligatory points. A bridge was a necessity in this section of the route for the continuity of the National Highway and the question of site for the bridge once again figured in this discussion. While the Government of India suggested a bridge at Nanniyur in pursuance of their policy to have the shortest route for National Highway, the State Government favoured the construction of the bridge at the present Velur-Pugalur crossing on the ground that it would substantially serve the Provincial interests of the country.

FINISHING TOUCHES : Construction is over, and the workers are giving finishing touches to the Pugalur Bridge, preparing for the opening ceremony.



Actually the engineering aspects of both the sites were considered more or less to balance, but the economical and commercial needs of the area outweighed all other considerations and became a deciding factor. As already stated earlier, the greatest possible agreement was in favour of the Pugalur-Velur site. The controversy of the recent years was finally settled, when our distinguished President of this function, the Hon'ble Sri K. Santhanam, Minister for State for Transport and Railways, Government of India, came at an opportune time to Madras and held a meeting on 24th January 1949, with the representatives of the State Government and finally decided on the Pugalur site.

After the question of site was finally settled, the plans and estimates were finalised by the Chief Engineer (Highways) with the concurrence of the Engineers of the Government of India, providing 40 spans of 60 feet, R.C. Tea-beams. Messrs. Gannon Dunkerley & Co., Ltd., Madras, who had already tendered for the original departmental designs, furnished their revised quotations for the new design for Rs. 26 lakhs.

Two Years of Intensive Work

The work was then put into execution, and it was my privilege to have a part in this. The foundation stone was actually laid on 9th May 1949. Difficulties were many and varied, such as lack of materials and transport, machineries and trained men. Yet, the work moved on and there was no pause in the activity, and the magnificent structure stands completed and the mighty Cauvery has been spanned to form a continuous highway from north to southern districts of our State. No more of tedious and risky crossings in flat-bottomed '*parshals*'. Cars, buses and lorries can from now onwards whisk across the river, carrying passengers and goods, reducing the transport costs and thereby the cost of living.

Much of the credit is due to the austere devotion and skill of the Engineers and officers of the Department and even more to the energetic co-operation and team-spirit of the contractors. I would like to take the opportunity to pay a tribute to those officers and contractors and to state that the fact that it had taken just a little over two years of intensive work to build this magnificent structure is comment sufficient on their achievements.

I would also avail this opportunity to say a few words to the contracting profession. Our great handicap in the past has been the lack of planning which naturally resulted in a series of bottlenecks in the matter of equipment, plant and machinery, trained personnel, etc., which are absolutely indispensable for the successful and economical execution of public works, and there has been a general apathy on the part of contractors to equip themselves with all the necessary machinery and personnel and they often depended on the Department for assistance in this regard. In the new set-up, when plans are drawn up on long-range basis and programmes are worked out based on priority of construction, the contractors may, with confidence, make adequate investments in modern construction machinery and surround themselves with the best trained or skilled men and thereby contribute their part in effecting economy in execution of public works. If only they realise this responsibility and co-operate in the endeavours of Government, the day will not be far off when the contracting profession can look back with satisfaction that they have done a good service to the country.

First Major Bridge Work

The Cauvery Bridge at Pugalur is the first major bridge work to be taken up and completed by the Madras State under the National Highways Programme. The cost of the bridge as originally estimated was Rs. 26 lakhs but the actual cost of construction, I am told, is likely to be about Rs. 30 lakhs. The work being a National Highway, is a liability of the Centre. But in this particular case, it must be mentioned that the State Government stands in a somewhat disadvantageous position. This is as a result of the past controversy on the question of alignment of this route and the site for the bridge. The Centre's contention mainly was that besides increased length of road, the bridge at Pugalur would cost much more than a bridge at Nanniyur, but nevertheless they agreed to adopt the Pugalur route provided that Madras themselves met any cost in excess of what it would cost the Centre, if the Nanniyur route were adopted, from their own resources.

These conditions were not acceptable to the State as it appeared to them rather paradoxical, that although National Highways are a liability of the Centre, the State Government should be required to contribute a portion of the cost of the bridge, for the simple reason that they would like to have the bridge constructed at a site considered most suitable to them. After a good deal of discussion on this point by the representatives of both the Central and State Governments, an agreement was reached that the Centre would bear an initial expenditure of Rs. 24 lakhs (the cost of constructing a bridge at the Nanniyur site and of the approach roads thereto as estimated by the Centre), and any expenditure over and above this amount is to be *shared equally* by the Centre and the State. Subject to these conditions, the Government of India accorded their technical approval and financial sanction to an estimate for Rs. 26 lakhs for constructing a bridge at the Pugalur site. The above condition was agreed to by the Madras State in a spirit of accommodation.

Cost of the Scheme

It, however, appears to me that it will be but meet that the Centre bears the entire cost of construction as National Highways are a complete liability of the Centre. Taking the example of this particular instance, it would appear that the Centre's decision was mainly influenced by considerations such as simplicity of execution, cheapness of cost and geometrical alignment. I would like to stress here that local needs should also be considered in all such cases and the site so selected as to confer the maximum benefit, both Provincially and Nationally; in other words, Provincial interests are to be treated as identical with National interests and the latter cannot be achieved by ignoring the former. If this is conceded, I do not see any justification for the State Government to bear any portion of the cost of the Scheme.

It may be interesting to recall that it was only during the distinguished premiership of Sri C. Rajagopalachari, the Madras Government finally decided in 1939 to construct the bridge at the present Pugalur-Velur site. It is therefore a very happy coincidence that this bridge should be declared open by himself.

From the Address by Sri M. Bhaktavatsalam, Minister for Public Works, on the occasion of the opening of the Cauvery Bridge at Pugalur on 23rd December 1951.

Review of Electricity Work

A review of the activities of the Government Electricity Department for November 1951 is given below:

Machkund Hydro-Electric Scheme.—Lands still remain to be handed over on the Orissa side though acquisition proceedings were taken four years ago.

All the bridges on Lamptaput-Machkund road were completed and opened for traffic. Most of the culverts were completed and work is progressing on the remaining culverts; 50·24 units of masonry were laid during the month for diversion dam and 8,303 units were yet to be laid. Excavation in Flume channel was in progress and 13 units of concreting, i.e., for 120 r.ft. bed length were done.

Invert cleaning in the Flume Tunnel was in progress and concrete lining for a length of 2,563 feet in the pressure tunnel completed.

Levelling of powerhouse area and grading for penstock slopes w.re in progress. Track line for haulage track was laid from Winch House to Valve House.

At Jalaput, temporary buildings and collection of materials for dam and excavation of Jalaput dam were in progress.

Thirty-eight more penstock pipes and few packages of turbenes, generators, haulage, winch, etc., were received during the month. Total labour force during the month was 3,700.

Moyar Hydro-Electric Scheme.—All the civil works from head works up to Frebay have been completed. The bigger diameter penstock pipes having been already laid, the smaller diameter pipes and the surge tank were under erection. The powerhouse building is nearing completion. The first generating unit and connected switch-gear were under erection.

Pykara III Stage Extensions.—Construction of Pykara dam involving excavation for foundation and masonry for main dam and wing walls continued progress. Work on earthen embankment on the right flank of the dam was progressing. All the pipes required for the erection of the 4th penstock line were received at site and about 65 per cent of the pipes were erected. Work on foundation for the extension of powerhouse at Singara was completed and erection of outdoor structure was in progress.

Madurai Thermal Scheme.—Erection of third boiler was completed and steam raised. Erection of minor accessaries was being continued. Turbine parts for the 2nd stage work are being received at site, checked and properly stored.

South Kanara Scheme.—Survey of the line was completed and preparation of tree valuation schedule was in progress.

Tungabhadra Hydro-Electric Scheme.—Preliminary works such as detailed surveys and taking trial pit particulars of site, etc., were completed and drilling operations was in progress at the Canal Powerhouse site to fix the location of the powerhouse.

Detailed survey for the transmission lines was progressing and 91 miles of reconnaissance, 60 miles of theodolite alignments and 54 miles of levelling work were done during the month.

Vijayawada and Visakapatnam Powerhouse Extensions:

At Vijayawada.—Flooring work completed. Erection of overhead tank 90 per cent completed.

At Visakapatnam.—Painting third coat of the iron members of boilerhouse roof was nearing completion (about 90 per cent). The tender for the extension of south and west side of the powerhouse is under examination.

Adoni-Yemmiganur Extensions.—Survey for the 33 KV line from Adoni to Yemmiganur was completed. Erection work has just been started.

Rayadrug 11/33 KV Line.—Survey of the line has been completed; 60 per cent of the pole erection has also been completed. In Rayadrug Distribution, 24 poles were to be erected to complete the pole erection. Stringing for 77 spans was completed.

Nellore Thermal Scheme.—All works were completed except sewage arrangements. Supply at Gudur already commenced.

Madras Plant Extensions.—The construction work of 'B' Power Station at Basin Bridge is in progress. About 1,350 tons of steel have been received at site of which 1,300 tons have been erected. On boiler No. 4 now under erection fixing of blocks for front Bailey Furnace wall is completed and for the side walls is in progress. Capping up of boiler tubes has been completed and the boiler is ready for hydraulic test. In respect of boiler No. 2, erection of supporting steel work for economiser and assembling and expanding of boiler sections is in progress. The chimney No. 2, has been erected to a height of about 45 feet. Work on 4 and 5 conveyors is in progress.

Internal welding of baggles and other supports inside condenser of the new turbo-alternator has been completed. The inside of the condenser was painted and the pressure tested satisfactorily.

Erection of 11 KV, 250 MVA switchgear was completed except for cables. One pillar is being erected in the 5 KV, 350 MVA gear. Erection of battery is in progress.

Madanapalle Scheme.—Land has been taken over for powerhouse site. The construction of the powerhouse building will be taken up shortly.

OPERATION BRANCH

Hydro areas.—The three hydro systems continued to run in parallel with Madras Electricity System this month also. The number of units generated, peak load and services connected during the month for the three Hydro-Electric Systems were as follows:—

Name of system.	Generation in units.	System peak load in K.W.	Services connected. Agricultural.	Industrial.	Domestic.
Pykara ..	19,671,600	41,000	70	6	222
Mettur ..	19,273,970	43,500	86	5	136
Papanasam* ..	13,979,900	23,700	35	1	224

* This includes 1,067,000 units generated by the Madurai Thermal Station.

Thermal area.—Supply conditions in Madras and Andhra Systems were satisfactory. Madras System continued to take relief from Mettur Electricity System.

In the Visakapatnam Division a 11 KV, 1000 KVA Booster was erected at Anakapalli and energised for improving the supply voltage conditions. Service connections in Rajahmundry, West Godavari, Vijayawada, Nellore and Anantapur Divisions were given.

The generation, peak load and number of services given during the month in the several areas were as follows :—

Name of System.	Peak load in K.W.	Generation in units.	Services connected. Agricultural.	Industrial.	Domestic.
1. Madras ..	28,300	10,043,620	14	23	260
2. Vijayawada :					
Steam ..	6,220	2,668,830	8	1	43
Diesel ..	770	127,700			
3. Visakhapatnam :					
Steam. ..	3,990	1,364,470	..	2	32
Diesel ..	960	120,100			
4. Kakinada.	740	190,636	..	5	8
5. Nellore ..	710	234,180	..	..	..
6. Rajahmundry.	765	152,634	..	..	1
7. Proddatur.	84	23,290	..	2	2
8. Kurnool ..	230	69,806	..	..	7
9. Anantapur.	165	45,394	..	..	16
10. Cuddapah.	161	42,105	..	..	17
Power purchased from Mysore :					
11. Hindupur.	116	43,400	..	..	..
12. Sokke ..	2,736	..	..	..	..
		Total ..	22	33	386

The units generated at Madras includes 383,825 units given as relief to Mettur.

Also in the Madras System, 43 D.C. services with an approximate connected load of 43·81 K.W. were changed over to A.C.

During the month four extensions costing over Rs. 10,000 and less than Rs. 30,000 were sanctioned by the Chief Operation Engineer (South) and Chief Engineer at an estimated total cost of Rs. 84,100.

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Restrictions on Supply of Electric Power in the Hydro-Electric Systems

Owing to the weak South-west Monsoon in 1951 and the partial failure of the North-east Monsoon once again, the Mettur reservoir storage is less than half the capacity of the reservoir and the level is declining with supplies of water essential for irrigation. The inflow into the reservoir during ensuing summer is also likely to be poor.

Owing to these factors, power generation at Mettur will be much curtailed and relief to the areas served by the Mettur Electricity System has to be obtained from the Pykara and Papanasam Electricity Systems through the interconnected power grid. In addition, the maximum possible relief from Madras and Madurai Thermal Stations will also be obtained. Furthermore, the new Moyar Power Station with the first 12,000 K.W. generator is expected to go into service in March this year and it will relieve the power shortage to some extent.

Notwithstanding these factors, the demand for power will be much in excess of the power available for supply. It has, therefore, been found essential to impose a cut of 15 per cent on the power requirements from the middle of January 1952. If the irrigation draft has to be heavy this month, an enhanced cut may also be inevitable.

In the circumstances, the following measures are unavoidable and have to be adopted throughout the hydro-electric areas with immediate effect :

(*a*) Agricultural and other rural loads in each distribution area will be grouped into two batches and supply will be afforded to each batch only for 10 hours in the day outside the evening peak load hours, viz., 6 p.m. to 10 p.m. The batches will be rotated for day and night supply periodically, according to local convenience.

(*b*) Staggering of holidays and recess hours of textile mills and the H.T. industrial establishments not engaged in continuous processes and evening peak load restrictions on L.T. power loads already in force will have to be strictly observed.

(*c*) Holidays of L.T. industrial loads will be staggered, if found necessary.

There will be a small cut in power consumption of 15 per cent with effect from January 15, 1952, on all uses except very essential ones like agricultural pumping, hospitals, railways, drainage pumping, water-supply pumping, etc., and except small domestic consumers with a monthly consumption of 18 units or less each.

The above restrictions will be enforced throughout the hydro-electric areas served by the Pykara, Papanasam and Mettur Electricity Systems and the areas in Chingleput District receiving supply of Mettur hydro-electric power including the Licensees' areas receiving bulk supply from these hydro-electric systems.

The Government regret that need should have arisen for imposing restrictions on the supply of power in this manner due to unavoidable causes. Consumers in the hydro-electric systems are requested to co-operate fully with the Electricity Department in the measures proposed to be taken. The restrictions and cut will be withdrawn

Electricity for Villages

The Government have sanctioned a proposal for the extension of supply of electricity from the Pykara System to 28 street lights, 97 domestic services and two domestic pumpsets at Odayankulam village in Vettakaranpudur Panchayat area, Pollachi Taluk, Coimbatore District, at an estimated cost of Rs. 41,600.

The Government have sanctioned a proposal for the extension of supply of electricity from the Pykara System to 70 domestic services, including two domestic pumpsets and 50 street lights, in Kuniamuthur Panchayat area, Coimbatore Taluk, Coimbatore District, at an estimated cost of Rs. 35,100.

Sanction has been accorded to the extension of supply of electricity from the Mettur System to Samalpatti, Girgapalli, Papparapatti, Dasampatti and Kallavi villages in Harur Taluk, Salem District, for 50 agricultural pumpsets and dine industrial loads at an estimated cost of Rs. 2,12,600.

Extension of supply of electricity from the Mettur System has been sanctioned, at an estimated cost of Rs. 3,01,800, for 93 agricultural pumpsets at Velur, Perumbakkam and Parikkal villages in Tirunavalur firka, Tirukkoyilur Taluk, South Arcot District.

Extension of supply of electricity from the Mettur System to 1,255 domestic services, 208 street lights, 300 agricultural pumpsets and industrial loads has been sanctioned at an estimated, cost of Rs. 10·342 lakhs, to Pallikonda, Tirumani, Agaramacheri, Chinnacheri, Vettuvanam, Kiluthinathankuppam, Mudinampatti, Virinchipuram and Kothamangalam villages in North Arcot District. This extension is expected to be carried out in ten years.

The Government have sanctioned the extension of supply of electricity from the Mettur System to 93 agricultural pumpsets, and 7 industrial loads at Nemili, Vettangulam, Kilvidlu and Punnai villages in Arkonam Taluk, North Arcot District, at an estimated cost of Rs. 2,41,900; to 87 agricultural pumpsets and one industrial load, at an estimated cost of Rs. 2,53,700, at Nallavanpalayam, Savalpoondi, Kilmakkarai and Tikkan villages in Tiruvannamalai Taluk, North Arcot District; to 102 agricultural pumpsets and one industrial load, at an estimated cost of Rs. 2,26,200, at Kondancheri and Perambakkam villages in Mappedu firka, Tiruvallur Taluk, Chingleput District; to 141 agricultural pumpsets and 2 industrial loads, at an estimated cost of Rs. 2,67,800, at Ananthapuram, Pitchivakkam, Pudukesavaram, Palayakesavaram and Sevithupalayam villages in North Arcot District; to 178 agricultural services, at an estimated cost of Rs. 3,49,000, at Bheemavaram, Seshapuram, Arepalli, Pulligaripalli, Ramireddipalli and Chinnaramapuram villages in Chandragiri Taluk, Chittoor District; to 124 agricultural pumpsets, 17 industrial loads, at an estimated cost of Rs. 3,45,200, at Veeramisettipalli, Nariyaneri, Gajjalanaickenpatti, Kandili, Parandapalli, Kagapatti, Thokyam and Gummidikanapatti villages in Tiruppattur Taluk, North Arcot District; and to 99 agricultural services and 4 industrial loads, at an estimated cost of Rs. 2,31,500, at Kothakota and Asanapuram villages in Chittoor District.

Sanction has been accorded for the extension of supply of electricity from the Mettur System to 1,800 domestic services, 360 street lights, 460 agricultural loads and industrial loads, at an estimated cost of Rs. 13·807 lakhs, at Madurantakam and Karunguzhi villages in Chingleput District. The extension will be carried on in ten years.

Electricity in Jinnur village.—The Government have sanctioned a proposal for the extension of supply of electricity to 11 agricultural pumpsets, 4 industrial loads, 153 domestic services, 5 flat rate services and 21 street lights at Jinnur village, West Godavari District, at an estimated cost of Rs. 1,15,700.

During the week ending December 15, 1951, the Government have sanctioned a proposal for the extension of supply of electricity from the Pykara System, at an estimated cost of Rs. 3,46,150, in the first year, rising to Rs. 4,29,350 in the tenth year, for industrial, domestic and street lighting purposes at Mannalur, Kunnisseri, Pallavoor, Puthiyankam, Alathur, Kavasseri and other adjoining villages in Palghat Taluk, Malabar District. The proposal envisages supply of power in the first year to 10 industrial loads, 330 domestic service connections, 50 flat rate services, 50 street lights (for Alathur Panchayat Board) and one cinema-house.

Sanction has also been accorded to the extension of supply of electricity from the Papanasam System, at an estimated cost of Rs. 79,850, to 29 agricultural pumpsets at Sammandi-Karisalkulam, Pattakulam, Sallipatti and Villupanur villages in Malli Firka, Srivilliputtur Taluk, Ramanathapuram District.

Electricity for Satyamangalam.—Supply of electricity to the town of Satyamangalam, a taluk headquarters in Coimbatore District, was switched on recently. The extension of supply involved the erection of about four miles of 11 KV lines from Shenbagapudur, where the supply is tapped off from the main trunk line from Moyar to Erode. The estimated cost of the scheme for this extension was Rs. 1¾ lakhs. Power is now available in the town for domestic, industrial and agricultural consumers.

Sub-station at Dalmiapuram.—The Government have sanctioned the construction of a third transmission line circuit from Erode to Tiruchirappalli and thence to Dalmiapuram to cater to the increasing demand in the Tiruchirappalli-Tanjore areas. This section of the 66 KV line from Tiruchirappalli to Dalmiapuram, about 30 miles in length and costing approximately Rs. 13 lakhs, was completed in November 1951 along with a 66 KV sub-station at Dalmiapuram.

The Bhairavanitippa Project

By SRI A. R. VENKATACHARI, Chief Engineer (Irrigation)

The inauguration of "The Bhairavanitippa Project" is a third big event in the history of Anantapur and Bellary Districts after the attainment of Indian Independence. The "Upper Pennar Project", the first large reservoir project at a total cost of nearly Rs. 84 lakhs, was inaugurated by the General Secretary, All-India Congress Committee, on the 4th of July 1949. The second one "The Pennar-Kumudavathi Project", at a cost of about Rs. 20·00 lakhs including all charges, was inaugurated the same day as the Upper Pennar Project by the Honourable Minister for Public Works. These two projects are across the River Pennar. The Bhairavanitippa Project inaugurated on December 28, 1951, is on the River Hagari, another big river in Rayalaseema and will be the second large reservoir project to be inaugurated.

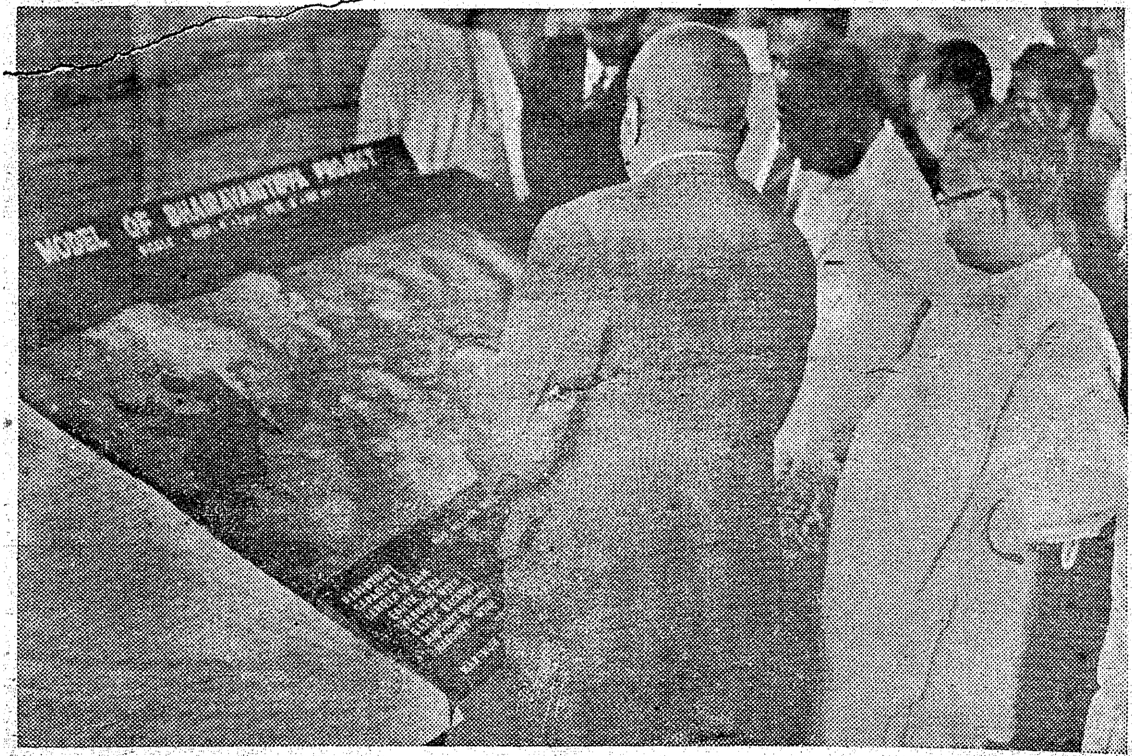
This reservoir scheme will benefit portions of Rayadrug and Kalyandrug Taluks of Bellary and Anantapur Districts. These areas are representative of areas which are almost always hit hard by adverse seasonal conditions resulting in frequent famines and drought. The River Tungabhadra which runs in a deep valley in the Bellary District is too low to be of much use to these upland parts. The few other rivers that flow through these districts, have their sources in the comparatively rainless tracts or drain large belts of ploughed lands, the run-off from which is both small and precarious. Though they do not bring much water, what they do bring has nevertheless to be put to good use.

The River Hagari

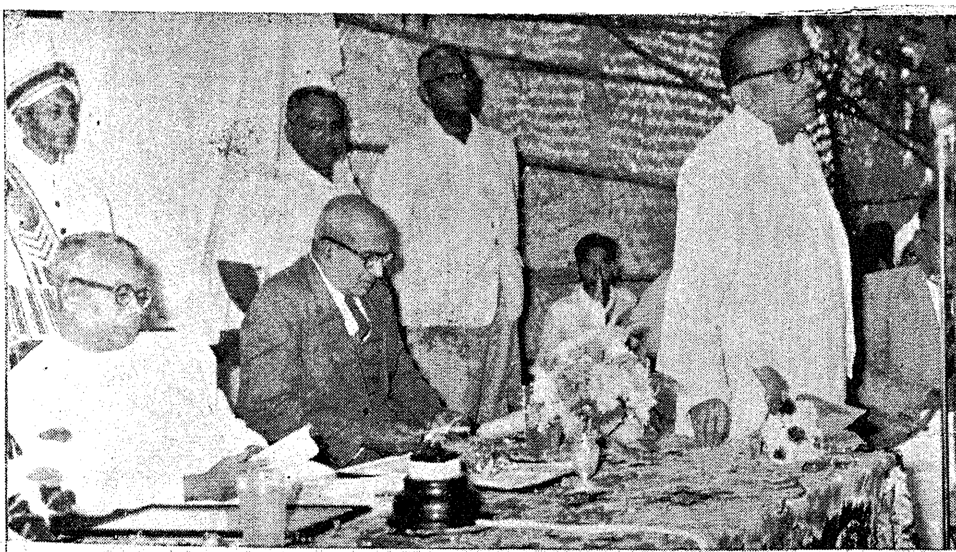
The River Hagari across which the present reservoir is proposed to be built, starts in Mysore District in the Baba Budan Hills (near Chikmagalur in Kadoor District) about 138 miles above the proposed reservoir site and runs along the boundary between Anantapur and Bellary Districts and falls into the Tungabhadra river. The River feeds a large number of spring channels all along its course on either side both in the limits of Madras and Mysore. This river has been already dammed up in Mysore about 40 years ago at a place Marikanave which is about 68 miles above the Madras border.

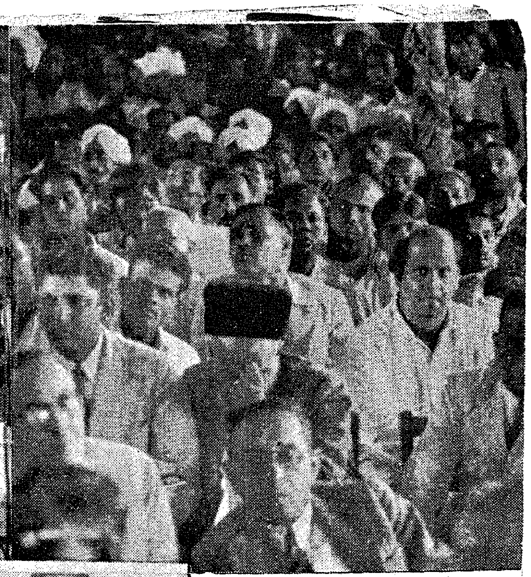
Various proposals for an anicut scheme either at one place or other were considered in the past for utilising the Hagari waters for irrigation. But it was found that such anicuts would not be successful in a river subject to fitful flows and would confer no great benefit on lands which need water continuously for cultivation. Hence, a reservoir scheme has been proposed. Five alternatives were investigated as the present and finally adopted site involved protracted negotiations with Mysore. Finally Bhairavanitippa was chosen and detailed plans and estimates were prepared for this site.

The reservoir site is about a mile downstream of the Mysore frontier. The reservoir when built will submerge a sizeable area of occupied lands in Mysore limits including a few villages. A number of conferences were held lasting over years with Mysore and an agreement was only recently



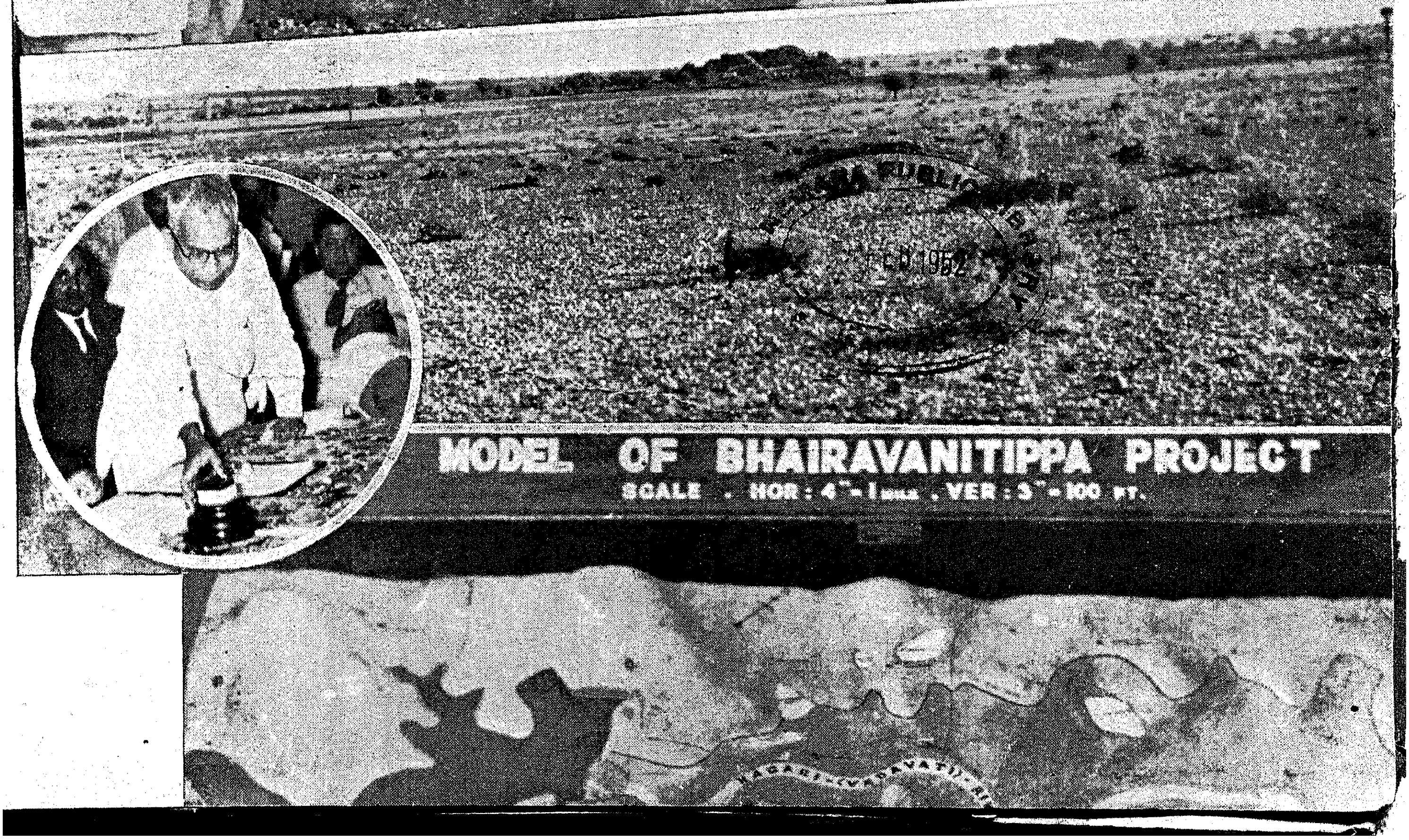
BHAIRAVANITIPPA MODEL : Sri A. R. Venkatachari, Chief Engineer for Irrigation, explains the intricacies of the

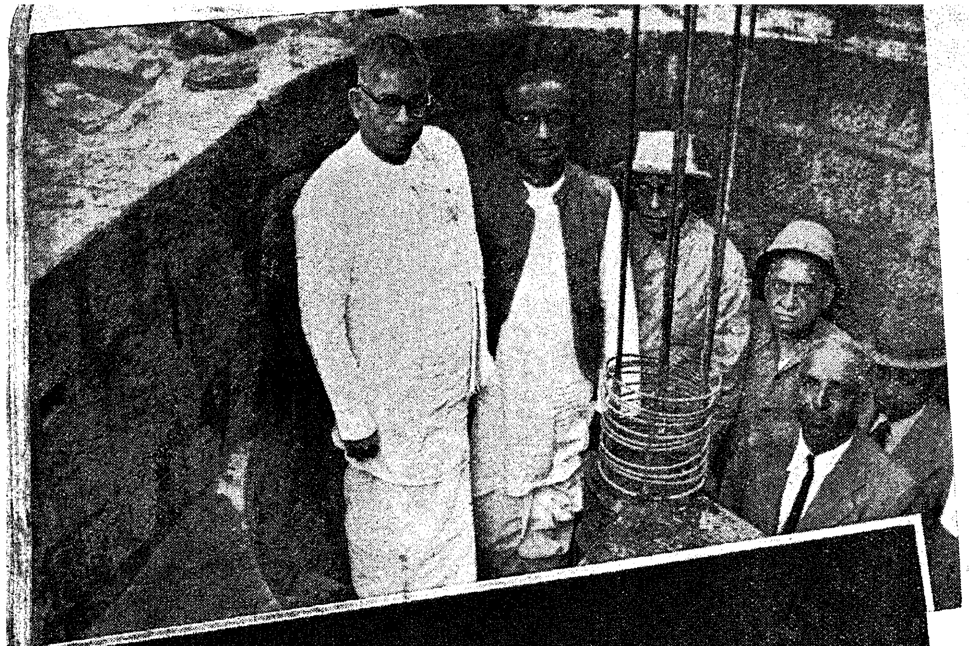


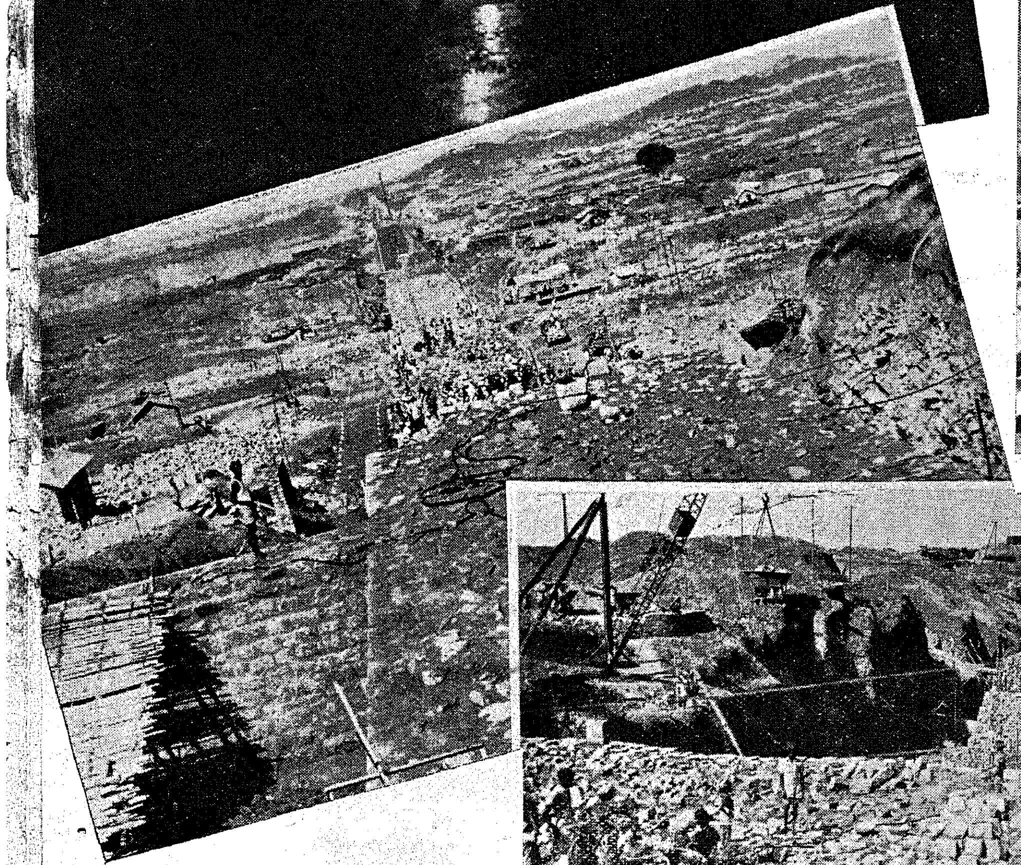


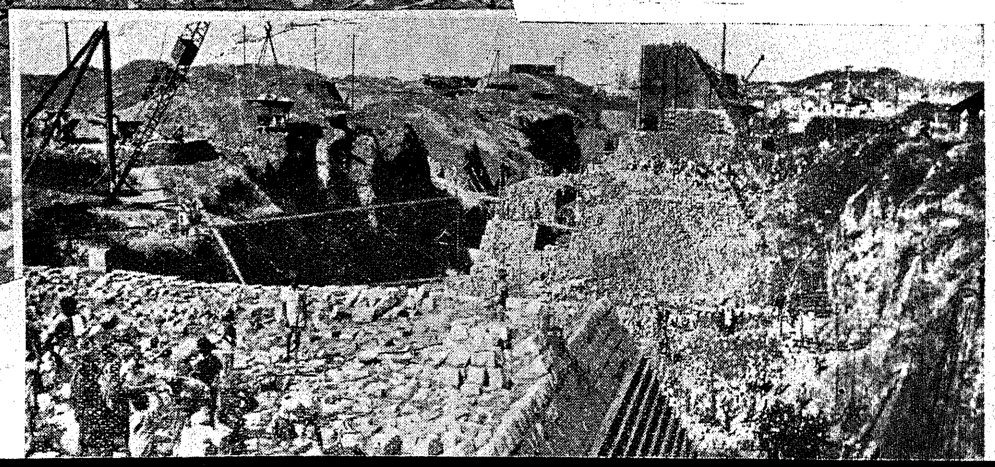
THE BHAIRAVANIT[illegible] PROJECT : The Bhairava[illegible] Project for Rayalaseem[illegible] inaugurated on December 28, [illegible] The scheme for River [illegible] in the form of a reservoir [illegible] will benefit portions of Ra[illegible] and Kalyandrug Taluks of [illegible] and Anantapur Districts.

The Project, estimated to[illegible] Rs. 93·1 lakhs, will benefit [illegible] about 8,500 acres of old an[illegible] irrigation, and yield in norma[illegible] about 4,500 tons of addition[illegible] grains. The work is expe[illegible] be completed in about thre[illegible] half years.









PROGRESS AT TUNGABHADRA

Steady progress is being made on the Tungabhadra Project, and the pictures on this page illustrate the various phases of construction.

Left (*top to bottom*) : (1) The Minister for Public Works and the Minister for Labour at the circular staircase leading to the Drainage gallery. (2) The Drainage gallery running alongside the body of the Dam. (3) Right flank of the Dam. (4) Gap for sluices.

Right (*top to bottom*) : (1) Masonry work in the Hydro-electric pipe section. (2) Rear face of overflow section. (3) The 'Bucket' for dissipation of energy. (4) River flow diversion over control portion of Dam.

Above : Circuit House on the top of the hill on the Madras side.

Below : Non-overflow section of the Dam.

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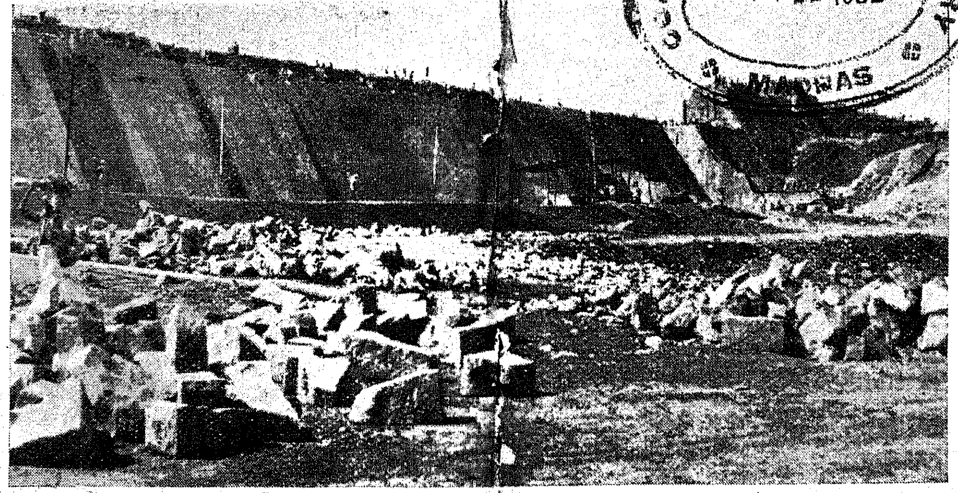
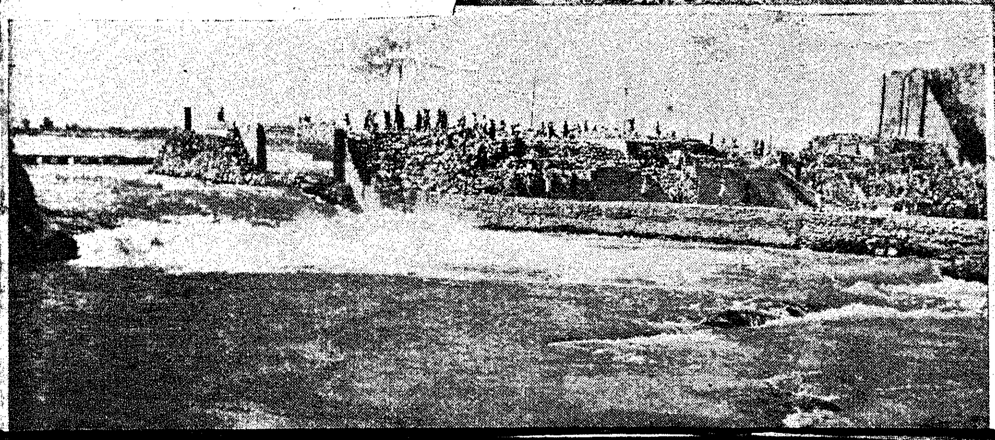
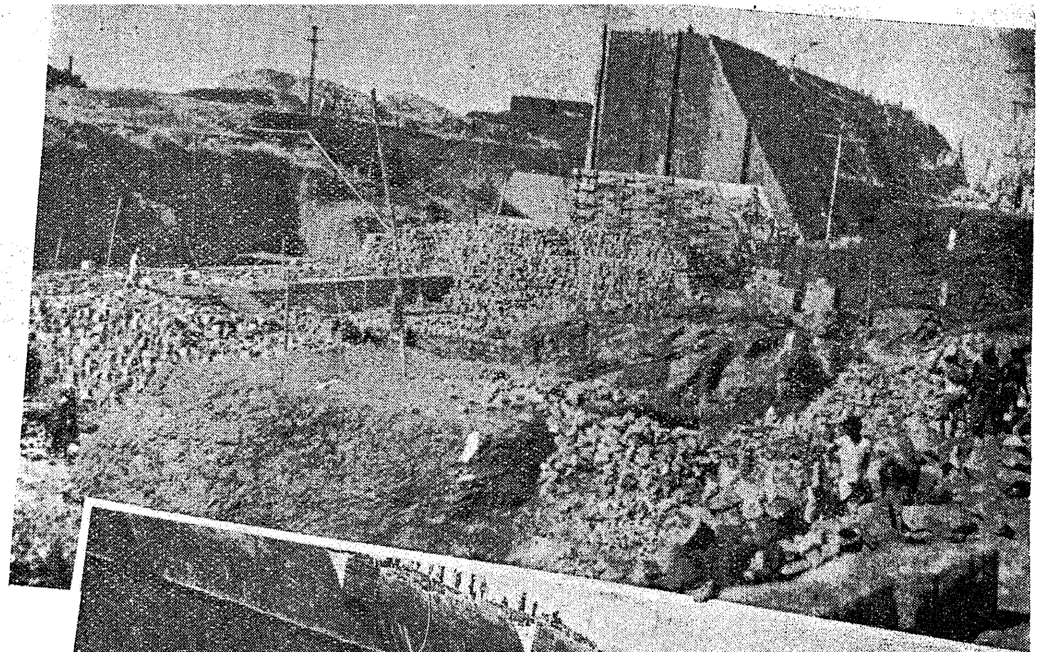
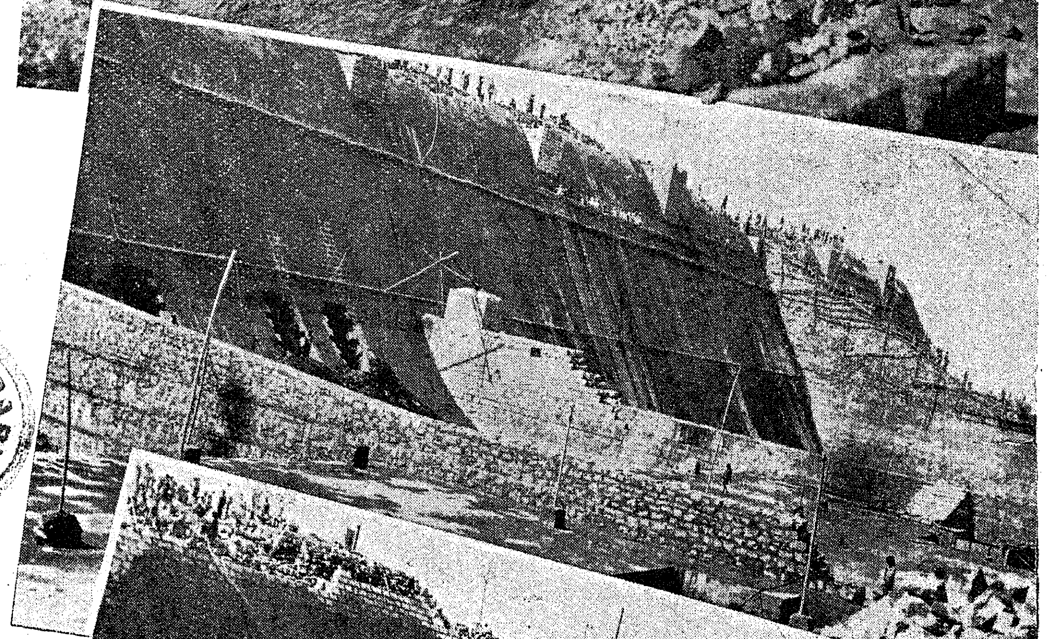
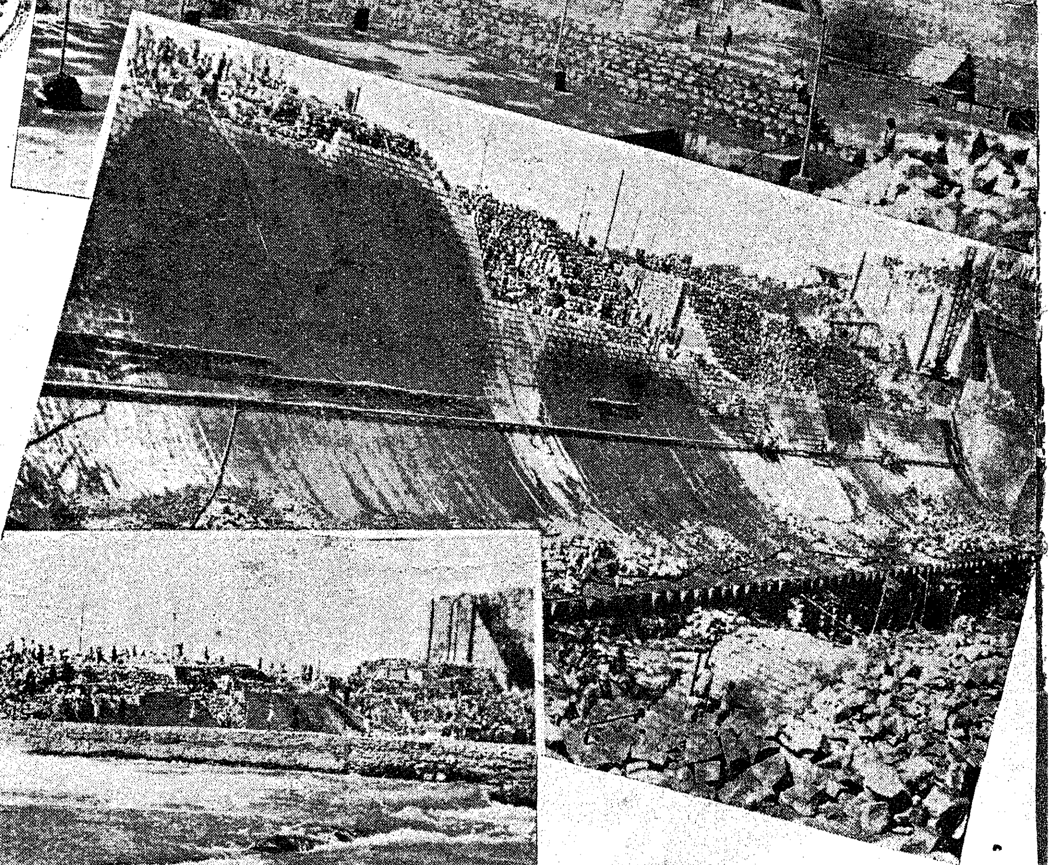










MRS. MUNSHI IN THE CITY

Mrs. Leevathi Munshi, wife of India's Food Minister and Vice-President of the All-India Women's Council, recently visited Madras City.

She inspected *Annapoorna*, the non-cereal cafetaria at the Government House Estate. The Women's Food Council, she revealed, planned to open such cafetaria in every city and town, and also supply nutritive non-cereal dishes to III class passengers in Janata Expresses.

Mrs. Munshi also visited the Training School for Social Welfare run by the Women's Welfare Department, a meeting of the Guild of Service and the Food Nutrition Department of the Women's Christian College.

reached between the two Governments—Madras and Mysore. Mysore has kindly agreed to acquire lands in Mysore territory at the cost of Madras and in return she is also enabled to carry out a scheme of extending irrigation on the river.

Scope of the Project

The special staff sanctioned by Government in G.O. Ms. No. 2143, P.W., dated 9th August 1946, for investigating the project, examined all aspects of the project: (i) availability of supply, (ii) suitability of site, (iii) submersion in Mysore State, (iv) availability of labour and materials, and (v) development of ayacut, etc., and submitted plans and estimate amounting to nearly Rs. 93·1 lakhs. These were submitted to Government and have been also sanctioned by them.

The project as sanctioned comprises the construction of a reservoir across the Hagari or Vedavati River near Bhairavanitippa village and excavation of two canals on the right and left margins of the river; the canal on the right will be 19 miles long and that on the left 26 miles long. The right side canal will irrigate 2,500 acres (2,000 acres new + 500 acres old) and the left side canal 6,000 acres (4,000 acres new + 2,000 acres old).

The following are the salient features :—

Useful capacity of reservoir ..	1,500 m.c. feet.
Annual storage	2,000 m.c. feet.
Total length of dam 2,780+3,940.	6,720 feet.
Length of earth dam including a composite dam for 400 feet from L.S. 4,315 to 4,715 ..	2,780 feet.
Maximum height of earth dam above the deep bed level of the river about	60 feet.
Masonry spillways are proposed to be provided as follows :—	
L.F. ogee spillway about ..	960 feet.
R.F. ogee spillway about ..	330 feet.
L.F. narrow crested weir ..	1,650 feet.
R.F. narrow crested weir ..	1,000 feet.
Total length of surplus works ..	3,940 feet.

Benefits of the Scheme

The registered ayacut under spring channels of Hagari has not been fully developed and remissions are being granted annually on an average for 2,440 acres. It is expected that with the help of this reservoir the existing supply channels will get good and regular supplies and water will also be found for the 2,440 acres now granted remissions. The entire scheme will benefit in all an area of about 8,500 acres consisting of both old and new irrigation.

The nearest rail-head for the dam site is Rayadrug railway station, which is the taluk headquarters and is about 13 miles from the dam site. There is a second-class metal road connecting Rayadrug and Eradikera. This road to 8/4 mile will be improved into a good metalled road and a cart-track in continuation of it, about 4½ miles long leading to the dam site, will be metalled during the execution of the project.

The work is expected to be completed in about 3½ years. With the ryots' co-operation and with normal seasons, it should be possible to reap the full benefits of the scheme as soon as the project is completed. In normal years, about 4,500 tons of additional foodgrains are expected to

Tank Improvement Schemes

An estimate amounting to Rs. 35,000 for works or Rs. 45,000 inclusive of direct and indirect charges, has been sanctioned for the restoration of Edavalli Tank in Panniyur village of Tiruvannamalai Taluk, North Arcot District. The Scheme will provide assured supplies to the existing ayacut of 30 acres (with insecure supplies) and will also bring under irrigation an additional extent of 66·5 acres. The additional yield from the scheme is estimated at 37 tons of foodgrains per annum. This scheme is to be executed by the Chief Engineer (Grow More Food).

An estimate amounting to Rs. 1,52,000 for works or Rs. 1,97,607 including direct and indirect charges, has been sanctioned for carrying out special repairs and improvements to Mentada-Nellivada channel in Vizianagaram Taluk of Visakhapatnam District. The scheme is intended to bridge the gap of 2,100 acres of ayacut under the channel which is now without irrigation, besides benefiting an extent of 700 acres already under irrigation. The additional food production anticipated is 1,138 tons per annum.

Degrees of Saugar University

The Government of India have ordered that the provisional recognition accorded to the B.E. (Pass) and B.E. (Hons.) degrees of the Saugar University, be made absolute for purposes of recruitment to posts and services under the Central Government.

Iron and Steel Control

The Iron and Steel Controller, Calcutta, has since declared that " bars " whether bent or looped at either or both ends or elsewhere and called " Roofing Bars " or by any other name, are essentially " bars " falling under " Controlled categories " and therefore come under the purview of the Iron and Steel (Control of Production and Distribution) Order, 1941.

Survey into the Economic Utilities of Palmyra Palm

The Palm Gur Adviser to the Ministry of Agriculture, Government of India, suggested that it would be desirable to conduct a survey into the economic utilities of the palmyra palm in this State in the first instance as a preliminary to a survey of the economic utilities of all palm trees. In view of the importance of the palmyra palm in the agricultural and industrial economy of this State, the Government accepted the proposal. The Economic Adviser to the Government has prepared a comprehensive questionnaire for the use of the staff of the Co-operative Department who are entrusted with the work. The questionnaire seeks information on the extent of land covered by palmyra palm trees, the number of such trees, cost of cultivation, yield and income, industrial employment and output, marketing of the products and the role of co-operation in the rehabilitation of ex-toddy tappers.

The survey is now confined to the three districts of West Godavari, Ramanathapuram and Tirunelveli which are among the most important of the palmyra growing districts in the State. It was started on 1st August 1951 in the West Godavari District and on 1st September in the other two districts and is expected to be completed

The Rationalisation of Industry

By Sri J. M. LOBO PRABHU, I.C.S., Development Secretary, Government of Madras

The concept of rationalisation can be traced to the movement in Germany after the First Great War, to increase output of industry in terms of the input. In its original and strict sense, a rationalisation implied technical efficiency arising from scrapping of obsolescent plant and machinery. It was, however, quickly realised that machinery is only one of the agents of productivity, and that there was room to apply the scientific method to other agents also, notably, labour, the industrial organisation, the financial system, the supply of raw materials and marketing. In its extended sense, rationalisation of industry is indistinguishable from planning, labour, capital and natural resources being scientifically studied and consciously co-ordinated to yield the highest possible returns.

The importance of machinery is that it eases and intensifies human labour. To the extent horse-power is added to any operation, the manpower required is altered. The result of increasing the ratio of machinery is first that the volume of human labour required is reduced, second that the value of the labour employed is increased, third that prices are reduced, and fourth that profits are enhanced. The employees, employers and consumers are benefited, at the cost of some labour which is retrenched. If something is done to employ the surplus labour, the process of rationalisation would be welcomed on all sides.

Obsolete Machinery

The position of most Indian industries is that the plant and machinery are not only obsolescent now but were never anything else before. When the country was subject to foreign domination, Indian industries grew up only in the interestices which foreign supplies could not cover. Many of them started from equipment salvaged from the scrap heap. When the war widened the gap in supplies and assured a demand for local production, machinery was not available. Since the war, deliveries of machinery from abroad have been slowed and are now most expensive on account of currency and international complications. Generally speaking, except in the textile and steel industry, the efficiency of our machinery bears no comparison with that of industrialised countries. Consequently, the productivitiy of our manpower is a fraction of that of U.K., which itself stands in a ratio of 100 to 280 to the U.S. manpower more heavily aided by technical efficiency.

What has prevented improvement of industrial efficiency? In the first place, labour is so cheap that many industries find little advantage in employing machines to save it. In a sense therefore the recent increase in labour cost is pressuring industry to employ more efficient machinery, which in turn will appreciate the wages of labour further Secondly, technical efficiency belongs to the context of general industrialisation. In India various industries have been planted to meet certain sheltered demands, without reference to capital industries for absorbing their bye-products. In such lonesome conditions not only the impulse but the means to move from change to change, do not exist. Thirdly, many industries have started with such poor equipment that it is better scrapped than improved.

And this leads to the question of cost. In spite of concessions the income-tax absorbs a good part of the money that could be available for reinvestment in industry. Again, awards of bonus by Industrial Tribunals have reduced profits capable of reinvestment. At the same time new capital is difficult to attract under the prevailing adverse climate. And with all these facts is another, the cost of repair and replacement which has arisen steeply due to international conditions, so much that the Planning Commission estimates that a minimum of Rs. 150 crores will be necessary in the next five years. Lastly, rationalisation has been opposed by labour as reducing employment.

Political or Economic Remedies

What are the remedies ? In respect of cheap labour, the end seems to have begun from the political, if not the economic end. Under Democracy, an increasing share of the national dividend will be claimed by the actual workers. Economics will also reinforce this tendency because the redistribution of incomes and the creation of purchasing power in the end increases the demand for consumer goods, which should stimulate industrialisation. It is claimed, however, that some measure of planning is required if industrialisation is to possess a natural roundness and integrity. Certain basic industries to supply capital goods and a large class of industries to supply standardised fittings and equipment are necessary.

In this connection, there is criticism that the Five-Year Plan has dealt with industry in the abstract, without taking any help and advice from technicians about the structural necessities. After the war, in England, a committee on Industrial Productivity was formed from by prominent persons in industry and scientific research. Working parties, Development Councils and the Anglo-American Council on Productivity, all in their turn aligned the wide field of industry, strengthening weak sectors with subsidies. Regarding obsolescent machinery also, the example of U.K. is important. For instance, in the textile industry a subsidy of 25 per cent involving a total cost of 13 millions was given for modernising spinning.

In respect of finance, detailed examination will be made later. The present climate for investment is no doubt unfavourable, but the Planning Commission has not suggested what should be done. The attitude of labour to rationalisation seems to rest on some misunderstandings. Labour has everything to gain from the introduction of machinery which intensifies its effective power and by increasing profits, ensures better wages. No doubt some unemployment of labour may result but to the extent that efficiency adds to profit, industrial expansion can take care of much more than the total labour now employed. A long range-view point is necessary on the part of labour, while employers and Government can take various measures to retrain and re-employ surplus labour.

Labour is a Vital Factor

Labour is a very important agent of productivity in respect of which considerable rationalisation is possible. In this both capital and labour have to co-operate. As far as capital is concerned, it is now generally recognised that

far and above extra payments made to it. Unfortunately, what is indisputably sound theory is not even uncommon practice. Most employers pay labour as little as possible and that only to stave trouble. In this also they fail because under the general awakening, labour is now resorting generally to Industrial Tribunals to obtain a share in the profits.

The employers therefore lose first the grace of giving and second the incentive which a prospective share in profits can give to labour. Some general scheme for partnership between labour and capital is necessary in the interest of both. If, as recommended by the Planning Commission, basic wages ever the entire industrial field are more or less equalised and differences are related to the special contribution made by individuals or bodies of labour, not merely ethics but economics will be served. Whether the differential wages should be individual or to the whole body of labour employed will always remain a matter of dispute.

It is important, however, to note that England, which is the home of trade unionism, is rapidly passing over to payment of individual incentive bonuses. In the iron and steel industry 63 per cent of the workmen were paid on the piece-work basis. In the engineering, motor vehicles, textile, building trades, incentive bonus payments are increasing. According to recent surveys 80 per cent of the manufacturing firms have some form of payment by results. It would appear that both employees and employers are recognising their mutual advantage in doing their best by each other. In India also, if the general test of productivity is applied, some of the existing systems of wages will have to be revised.

Industrial Organisation

In respect of the industrial organisation, the rationalisation which has been taking place in U.K. is of guidance. Government action has been threefold: first, distribution of raw materials, investment and manpower according to plan, second, statutory bodies to investigate and promote efficiency, and third, publicity to induce efficiency consciousness. Other corporate action has been through the Anglo-American Council of Productivity, through Trade Associations and Trade Unions. Action within the industry at factory or equivalent level is in main the responsibility of the management. The result of these three agencies has been first to increase the ratio of capital investment per worker. Government have stimulated investment by initial tax allowances of 20 per cent later increased to 40 per cent on new plant and machinery and 10 per cent on buildings. Industrial consultants and production engineers have been extensively used to realign plant. There has been a marked increase in mechanical handling.

In respect of labour, time and motion studies have enabled the best use of the available labour skill. Education and training facilities have been created in 50 sectors of the industry. Training of supervisory grades has been considered to be of great importance. Facilities for labour like better lighting, canteens have won a large measure of willingness and have enabled increase of the length of the working week. In respect of land and raw materials, controls and co-operative action have enabled the best use of the little the U.K. has and the large quantities she must import. The same co-operative tendencies are apparent in two other directions, first simplification and standardisation of production, second research. Standardisation brings about economies both to the manufacturer through simplification and the user through lower prices for given quality, improved availability of replacements and spare parts and the need to carry smaller stocks.

In India, the need for standardisation is fortunately matched with the opportunity for the same. As a late starter, India can take advantage of the standards reached by other countries and can enforce them, as a condition for starting the industry. In respect of consumer goods also standardisation appears necessary, because the variety of lengths and sizes is one of the principal handicaps for our trade abroad. In research, the U.K. Department of Scientific and Industrial Research, with 40 Research Associations covers almost all industries. The National Research Development Corporation takes over inventions of commercial value development to the point they are capable of being used, on the basis of licences.

In India, since Independence, there has been some consciousness of the necessity for research. The Planning Commission has also recommended development councils. What seems to be lacking is an impulse for improvement. The account as far as industries are concerned is to make easy money. As far as Government is concerned, the work has been too much on the top, with little or no extension activity. More co-operation between Government and industry is necessary. It may be desirable for development councils to examine production in detail and to suggest improvements, which may be pressured by the grant of subsidies or remissions of tax. At the same time, the Industries Development and Regulation Act, 1951, should enable that extension of capacity should be associated with certain standards of production. In any case, the time has come to apply the test of productivity more positively to industrial production, as this is necessary not only in the interest of the country, but of labour whose outturn depends to a great extent, on the methods of production employed.

The Financial System

The Financial System has a great deal of influence on production. The Planning Commission has advocated a disinflationary policy coupled with a system of controls. The recent increase in bank rates and the restrictive curbs on bank credit seem to be conceived for disinflationary purposes. The result has been a fall in the prices of shares without any corresponding fall in the value of commodities. There is a school which maintains that inflation is not the result of the volume of money in circulation, so much as of the quantity of consumer goods available. It is maintained by them that restrictive credit measures communicate a hesitant effect on all lines of production reducing enterprise with corresponding increase in prices.

Alternatively, it is pointed out that increase in prices has shown no actual relation to the note issues, but a definite relation to the food policy of Government. Throughout the war, in spite of the larger volume of notes in circulation, the general price level remained low because the food prices were relatively low. Since food production declined due to controls and prices were raised, the general price level has been rising in spite of a reduction of money and credit. The rationalisation that is pressed in respect of finance is that it should be related to encouraging production, on the theory that in an undeveloped country, expenditure on production can never cause inflation.

One of the reasons assigned for the povery of production is the system of controls. In the first place, the vexatious nature of these controls discourages the majority of producers naturally prone to be content with what they have. Secondly, to the extent that prices are immutably fixed, they do not stimulate increased efforts. It is pointed out that agricultural production reached its peak in 1943 under the stimulus of increasing prices and have since declined due to the efficiency of prices control and procurement.

Basic Ration for Non-Producers

The position however is that the non-producing population has to be fed and cannot be exposed to such prices as the producers could now dictate in conditions of shortage. The solution offered is a general system of levy sufficient to provide a basic ration to the non-producers. Anything that remains over the levy, including production from new areas, should be free of all controls, the presumption being that the producers will eat less or produce more in order to obtain high prices available in the free market. It is assumed that the incentive could stimulate production to meet the whole of the efficient demand, wiping out the black market at the same time. The mechanics of this change are established by the experience of the free market allowed to sugar production.

It is claimed that not only to agricultural production but also for industrial production, a free market should be allowed, after specified supplies are delivered. The proposal of the combination of controlled and free market is one that deserves more consideration that it has received. In some countries, notably the Communist countries, the free market has been used to stimulate production as the controlled market is maintained to secure basic needs of the population.

Thirdly, controlled prices are stated to discriminate in favour of trade against industry. By assuring a safe margin, sometimes enhanced by black market dealings, trade attracts capital away from industry. There is no comparison in the level and pace of profits from investment in trade and from industry. Apart from the waiting required for returns from industry, there is a cast-iron limitation of the rate of profits arising from controls, which takes no account of the risk involved from investment at the present high level of cost. This reaction of controls on industry is probably one of their most disastrous consequences. At least in respect of new industries, assurance of some free market is necessary. Otherwise there is little prospect of investment in industry.

Supply of Raw Materials

Supply of raw materials for industry is capable of considerable rationalisation. There appears too little planning in this respect. Even in respect of controlled commodities, many industries are not assured of raw materials according to their capacities. The same is the story in respect of structural and consumable stores required. Steps require to be taken at least in two directions. First, there should be definite production, aided if necessary by subsidies, of raw materials required to keep existing installations working to capacity.

Second, if shortage cannot be immediately reduced, it should affect least the more efficient units. In fact, a certain discipline will be enforced, which will lead to higher technical efficiency if distribution of materials in short supply is related to the use made of them. Under conditions of free supply inefficient units would never be able to compete for short supplies with efficient ones, which would mean in practice they would otherwise become efficient, or shut down. Controlled distribution has supported inefficiency to the extent that it enables many factories to exist by advantage only of controlled prices of raw materials on one hand and of finished products on the other.

In respect of marketing, rationalisation in many industrialised countries has led to the formation of combines and cartels, controlling prices. The position in India is, though it is a sellers' market, the demand is still short of its proper dimensions. In other words, the people must buy more, if they are to produce more. At present their consumption of essential goods is restricted by their purchasing power. The first step there is to create new purchasing power. The slight redistribution of incomes which has followed higher wages for industrial labour and higher prices for agriculturists has created some new purchasing power. This has to be augmented, if industrial expansion is to be sustained by growing markets. But purchasing power cannot be created by only raising wages and prices, as this would be defeated in the end by inflation.

The proper strategy is to raise productivity of both the industrial and agricultural worker. The industrial worker may respond to schemes of profit sharing and other incentives. The agriculturist has to be pressured to change his inefficient methods. The Planning Commission has recommended, "Village Production Councils," to maximise the yield of labour and land. That proposal may require to be enlarged by providing incentives, which may be in the shape of remission of revenue or preference for State Services like irrigation, seed and fertiliser supplies. An element of barter, that the cultivator does his own part in following the approved agricultural discipline in return for which the State will give preferences for his requirements, seems to be necessary. If this barter is worked on a collective basis, the village and not the individual only being measured for State service and favour, a natural but large force will be enlisted for introduction of efficiency in our agriculture. This efficiency and the consequent purchasing power is the best foundation for industrial progress.

Spending and Credit

There are two other factors in connexion with marketing which have not received sufficient attention. First, while we are teaching the submerged classes how to earn, we have not taught them how to spend. In consequence, much of the increased income of cultivators goes underground or is wasted in socio-religious ceremonies, while the gains of the industrial labourers are spent in hotels, cinemas and other distractions. There is little improvement in the living standards of these classes. There is a proposal that a part of the increased wages and prices should be paid in commodities essential to the health and welfare of the workers. A list of consumer goods could be prepared against which pay coupons would be encashable. This has the advantage not only of enriching the standard of the worker's life but of giving industries an assured demand. The proposal is well worth considering.

The second factor is about credit. In the U.S.A., a very considerable part of the workers' purchases are on the hire-purchase system. This not only swells the demands and quickens turnover, but has another effect, that it binds the worker to a certain volume of effort to repay his purchase. There is, so to say, a mortgage on his abilities to earn, which keeps him on the toes throughout. And the process grows on what it feeds, one item of purchase leading to another, so that the urge to spend and earn becomes continuous. The demands of the whole population get, so to say, on a conveyor belt, against which there is a corresponding assembly line in the production.

Rationalisation of industry therefore appears to cover a much wider field than individual industries. It is a strategy to streamline the entire economy to produce and to consume more. In this connexion not merely the mechanical but the human factors have to be organised. A purposive study of causations is required. The motto of that great institution, the London School of Economics, *Cognoscere Rebum Causas*, is most applicable to our economics. We must know the cause of things. So far, even economists have tended to accept Government decisions as economic principles. It is time that economic principles should become the basis of Government decisions. This is the rationalisation which our industry, our economy needs, organised action on reasoned deductions.

Rice Ration Restored to 6 oz. in Malabar, Nilgiris and South Kanara Districts

The Government have directed that the rice content of the ration for the rice eaters in the informally rationed areas of Malabar Nilgiris, and South Kanara Districts be restored with effect from January 13, 1952, to 6 oz. per adult per day. The overall ration in these areas will be maintained at 12 oz. per adult per day.

Conviction Set Aside

T. Basavaramiah, M. Narayanamoorthy and K. Satyanarayanamoorthy who were charged with contravening condition 6 of the licence issued under the Madras Foodgrains Control Order, 1947, and Shaik Subhan Sahib and Ch. Veeraraghaviah who were charged with abetting the contravention, were convicted and sentenced on July 28, 1950, by the Additional First-class Magistrate, Gannavaram. The particulars of conviction were reported in *Madras Information* of November 1950 (Volume IV, No. II).

On an appeal preferred by the accused, the Sessions Judge, Krishna, set aside the conviction and sentence of the lower court on September 27, 1950. On October 16, 1951, he also directed the refund of the cost of the stuff seized.

Dispensaries of Indian Medicine

The Government have approved the conversion of the rural dispensaries of modern medicine at the following places into dispensaries of Indian Medicine :—

Padalam in Chingleput District, Tirupoondi and Sembiamahadevi in Nagapattinam Taluk.

Revised Prize Scheme for Vanamahotsava

The following is the revised scheme of the Government of India for the award of prizes, in connexion with the Vanamahotsava celebrations ; There will be four All-India Shields as follows :—

(1) *The All-India Rajendra Shield.*—It will be awarded to the district in the Indian Republic, whose effort in tree-planting is adjudged to be the best. In arriving at this decision, the area, population, climatic conditions, and above all, the number of trees that survive at the end of the year, will constitute the main considerations.

(2) *The All-India Jawahar Shield.*—This Shield will be awarded to the village in the Indian Republic, whose effort is adjudged to be the best in the country for planting the largest number of trees and protecting them with thorn or other guards put around them.

(3) *The All-India Sardar Patel Shield.*—To be awarded to an institution, such as a court, district board, municipality, hospital, Public Works Department, Railway, forest or other college not affiliated to a University, research institute, military academy, Association, etc., whose effort at planting and guarding trees is adjudged to be the best.

(4) *The All-India Munshi Shield.*—To be awarded to a University (inclusive of affiliated colleges) for planting and protecting the largest number of plants.

There will be 20 State Shields. For this purpose, the States have been grouped as under : (1) Assam, Manipur and Tripura, (2) Bihar, (3) Bombay, (4) Madhya Pradesh, (5) Madras and Coorg, (6) Orissa, (7) Punjab (I), (8) Uttar Pradesh, (9) West Bengal, (10) Hyderabad, (11) Jammu and Kashmir, (12) Madhya Bharat, (13) Mysore, (14) P.E.P.S.U., (15) Rajasthan and Ajmer, (16) Saurashtra and Kutch, (17) Travancore-Cochin, (18) Himachal Pradesh and Bilaspur, (19) Vindya Pradesh and Bhopal, (20) Delhi.

With regard to the 20 State Shields referred to above, the State Vanamahotsava Committee, in collaboration with Van Premi Sangh, where it exists, will select the district which puts in the best effort in connexion with Vanamahotsava. On the basis of the recommendations of the Van Premi Sangh, where it has been set up, or without it, where there is none, the State Government will select the district in each State, which has put in the best effort in connexion with the Vanamahotsava and report to the Government of India. On approval, His Excellency the Governor of the State will make a ceremonial presentation of the shield to the Collector of the district.

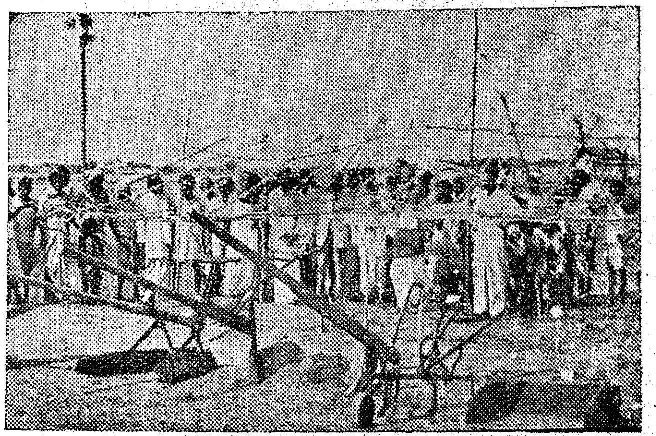
Rural Reconstruction Week in Srikakulam

W th a view to give a fillip to the Rural Reconstruction programme in the Firka Development area and to arouse the enthusiasm of the people in the scheme by their active participation, a Rural Reconstruction Week was organised by Sri N. Bhagwandas, I.A.S., District Collector, Srikaku'am, in th3 district. The Week was celebrated in 60 different villages within the Firka Development area. The Week commenced with Sanitation Day when, in spite of heavy rains and expected cyclone, most of the District officers took part in the celebrations and the Week was inaugurated. The next day was celebrated as Communications Day when, with the active help of villagers, the village communications were improved by either improving existing roads connecting the villages or building up new roads.

The third day was Agricultural and Veterinary Day, when the modern methods of agriculture were explained and practically demonstrated. Exhibitions were organised and emphasis was laid on compost-making and green-leaf manure. This was followed by a Health and Child Welfare Day. Baby shows were organised and health pictures shown. The fifth day was Co-operation Day when co-operative institutions were newly organised in places where they did not exist and dormant co-operative societies revived. Harijan Uplift and Education Day was celebrated in all the villages on November 30, 1951. Night schools were started on this day. The Week came to an end with Industrial Day when a Cottage Industries Exhibition was organised.

Films sh'ws were organised in the villages throughout the Week with the aid of the propaganda van leased by the District Board and instructive and educative films lent by the United States Information Services. The District Officers of the various branches organised the efforts in many villages and the Grama Sevaks with the aid of the Revenue staff attended to the celebrations in other centres. The peopl were greatly enthusiastic and the success of the Week owed much to their zeal and wholehearted support.

CATTLE SHOWS: Many cattle shows were organised in the villages and cinema shows exhibited to the villagers where the Srikakulam Rural Reconstruction Week was celebrated. Picture shows two pairs of prize winning cattle in one village, and the Propaganda Van.



AGRICULTURAL DEMONSTRATIONS: The Rural Reconstruction Week was celebrated in sixty villages in Srikakulam District. On the Agricultural Day compost pits silage pits, and slit latrines were dug in all the sixty villages.

A brief description of the celebrations in certain selected villages is given below.

Sanitation Day at Ippili

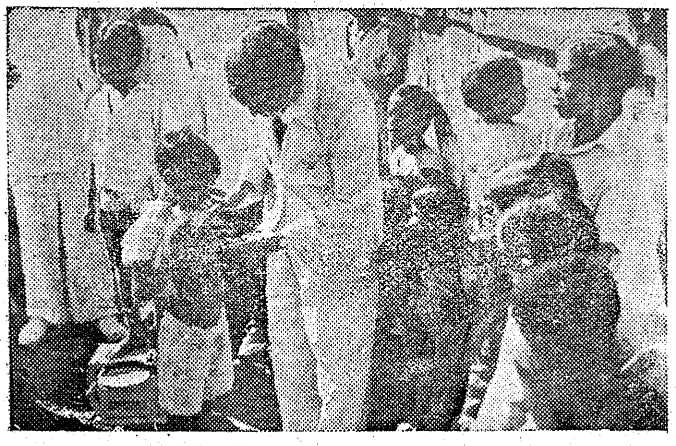
The Rural Reconstruction Week was inaugurated at Ippili on November 11, 1951, by Sri N. Bhagwandas, I.A.S., District Collector. In spite of the heavy rains and the fact that the officers had to wade through knee-deep water and walk a few miles through slippery mire with no other form of conveyance possible, the programme was kept up.

A public meeting was held in the local school building with the Collector presiding. In the course of his speech, the Collector appealed to the villagers to avail themselves of the opportunity and enjoy the fullest benefits specially provided to them under the Rural Development Scheme. He expressed the hope that the celebration of the Rural Reconstruction Week in the villages would give an occasion to the villagers to come into closer contact with the officials and to the officers an opportunity to study and understand the difficulties and needs of the rural population first hand. Explaining why village sanitation was given first preference, he declared that the first need of India was good sanitation in the villages. He regretted that due to rain already having done the work it was not possible for the officers to take up the broom and sweep the village clean as they had intended to do, "an ounce of practice" being better than a pound of advice.

Sri Krishnamurthi, Divisional Engineer (Highways), explained the significance of the Rural Reconstruction Scheme. The National Savings Organiser spoke about the Small Savings S heme. Sri B. Iswarappa Rao, a local schoolmaster, spoke on behalf of the villagers. Clothes were distributed to the needy and children were given sweets.

Communications Day at Salihundam

The celebration of Communications Day at Salihundam on November 26, began with the Collector [illegible]



CHILD AND MATERNITY WELFARE DAY: Children being examined; about 100 children and 20 expectant mothers were examined and given cards so that they could be examined periodically.

a small ghat road built to connect Salihundam village with the main Gara-Chintada road. This road had been formed within five days and made a hitherto remote village easily accessible. Though the construction of the road had been proposed a long time back, the scheme was on the shelf as an apparently impossible task. That this should be done in so short a time and so successfully is a happy augury for the provision of good communications in the village in the future.

A well, attended public meeting was held in the village under the presidentship of the Collector. In his speech, the Collector explained the need for better village communications to improve village economy and pointed out that it was not an impossible task for the villagers to build their own roads by co-operative effort. Thanks to the celebration of Communications Day many roads like the one he had opened were being constructed and several others being repaired. He congratulated the Divisional Engineer on having built an "impossible" road. The Divisional Engineer (Highways), Executive Engineer, the Deputy Registrar and the National Savings Officer also spoke.

The function ended with a vote of thanks after some refreshments were partaken by all the road-workers.

Agriculture and Veterinary Day at Ragolu

On November 27, 1951, Agricultural and Veterinary Day was celebrated at Ragolu village, under the direct supervision of the District Agricultural Officer, Srikakulam. The day was organised and celebrated like a festival by all the villagers, women and children also taking part in the celebrations. The programme started with early morning prayer, bhajanas and village sanitation. Every house was cleaned and decorated. An Agricultural and Livestock Exhibition was organised in the village and practical demonstrations on the preparation of compost, silage, slit latrines and all the modern methods of Agriculture were held. A few thousand vegetable seedlings were planted and green-manure seeds sown. The benefits of green-manuring, compost making and trench latrines were explained by the Agricultural staff. A Cattle Show was organised. A amp veterinary hospital was organised and more than 0 animals were treated.

A public meeting was arranged under the presidentship of the Collector who was taken in a procession through the village. The Collector in his speech advised the villagers to develop the spirit of self-help and co-operation for the common benefit of the village and to make the best use of the Government Rural Development Scheme. The District Agricultural Officer and the Veterinary Assistant Surgeon spoke on their departmental activities and impressed on the villagers that Government officials were always ready to give their advice and services. Prizes were distributed to the best cattle and poultry by the Collector. Films loaned by the United States Information Services on agricultural development in America, tuberculosis and its prevention, spread of disease and other educative subjects were screened in the village.

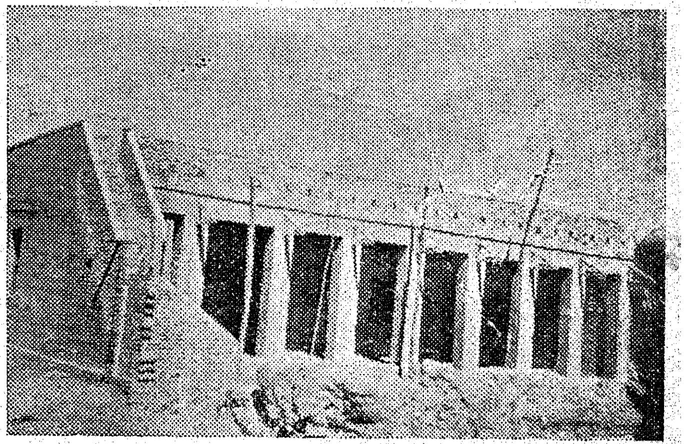
Health and Child Welfare Day at Singupuram

The Health and Child Welfare Day of the Week was inaugurated on November 28, 1951, at Singupuram by the Collector under the auspices of the Red Cross Association and the Guild of Service of the District Branch. A continuous whole day programme was fixed. The programme commenced with a prayer and flag-hoisting by the President, the Collector, Srikakulam. The Collector explained to the villagers the importance of health and the crying need for maternity and child welfare. The District Health Officer, the President of the District Board and Sri B. Apparao Pantulu spoke on the importance of health and the welfare of children. A Health Exhibition and Baby Show was organised in the village. Expectant mothers and children were examined and given cards to enable monthly continuation of the examination.

Rural sports were organised and milk was distributed to the children. In the evening, prizes were distributed by Srimathi Bhagwandas to the best baby and the most healthy expectant mother and to prizewinners in the rural sports. Educational films were screened.

Co-operation Day at Krishnapuram

Co-operation Day was celebrated under the presidentship of the Collector in Krishnapuram village. The Deputy Registrar of Co-operative Societies, the Deputy Superin-



GODOWN FOR CO-OP: The Virur Multipurpose Co-operative Society has undertaken the construction of a godown at an estimated value of Rs. 11,600. The Society was sanctioned a Government grant of Rs. 5,800 and a Government loan of Rs. 2,900. The members of the Society have contributed Rs. 2,900.

tendent of Police, the Rural Welfare Officer, the Tahsildar and other officials took part in the celebrations. The Collector stressed the importance of Co-operation and Co-operative activities for rural welfare work in villages. The Deputy Registrar of Co-operative Societies spoke on the benefits of the Co-operative movement. Sports and games were conducted, hundi boxes were distributed and a scout troop inaugurated in the village.. In the evening, a demonstration was given by the Fire Brigade, and film shows on health were screened.

Harijan Uplift and Education Day at Purushottapuram

On November 30, 1951, Harijan Uplift and Educational Day of the Rural Reconstruction Week was inaugurated in Purushottapuram village. The programme commenced with prayer and procession by the school children. Common feeding of Harijans and Caste-Hindus was organised and observed without any difference. Games and sports were conducted with Harijan and Caste-Hindu children taking part. An Adult Education Centre and a Reading Circle were opened in the village. Speeches were made on the importance of education and removal of untouchability. A film show was organised to educate the masses on health, agriculture and education.

Cottage Industries Day at Srikurmam

The Cottage Industries Day was inaugurated in Srikurmam village by Sri N. Bhagwandas, I.A.S., the District Collector, on December 1, 1951. The function commenced at 10-30 a.m. with the opening of a Cottage Industries Exhibition, where the products of various cottage and home industries manufactured in the village were displayed to encourage the industries and the local artisans. A public meeting was held in the evening when the Collector presided. Speeches were given by the Collector and other officers on the importance of the development of cottage and home industries. Prizes were distributed to the best exhibits by Srimathi Bhagwandas.

A " *Burra Katha* " on the various activities undertaken by the Women's Welfare Department for the uplift of the women folk in the rural areas was staged by the staff of the Women's Welfare Department. There was a demonstration by the Fire Services and instructive films of educative value were screened.

'KRISHI PANDIT' VELLAYYA GOUNDER : The title of "Krishi Pandit" and cash prize of Rs. 1,000 each were awarded by Sri Jawaharlal Nehru, Prime Minister, to the three champion farmers of 1951 at a ceremony held in New Delhi, on December 19. The three successful farmers this year are Sri K. Vellayya Gounder of village Thattampatti, Salem District, Madras State ; Sri Madho Kripal of Hapur (U.P.) and Ch. Padam Singh of village Shiampur near Hapur in U.P. This title is annually awarded by the Indian Council of Agricultural Research to those farmers "who have made outstanding contributions to the cause of Indian agriculture." Photo shows the Prime Minister making the award to Sri Vellayya Gounder. He produced 150 maunds of paddy per acre, the average Indian yield being 12·5 maunds per acre. He holds the world record for a yield of 12,000 lb. of paddy per acre.

Rural Welfare Activities

A brief note on the salient features of the activities of Rural Welfare Department in the areas selected for Rural Welfare work during November 1951 is given below:

Tirunelveli.—During the month of November 1951, 63 compost pits were dug, 14 charkas were sold and 1,333 hanks of yarn were spun; tools to the value of Rs. 2,299 were issued to the artisans.

Bellary.—During the month a sum of Rs. 3,725-8-0 was spent on village communications and another sum of Rs. 1,846 on Rural Welfare schemes. An expenditure of Rs. 885 was also incurred towards the construction of a reading room and a compound wall to the reading room at Ramadurgam village. Three charkas were introduced; 85 hanks of yarn were produced. Twenty-two sanitary drives were conducted. Eighty-two compost pits were dug and 21 charka demonstrations were conducted.

Tiruchirappalli.—In Musiri firka a firka tournament was conducted in which all the villagers participated. Prizes to the value of Rs. 100 were given. A Cottage Industries Co-operative Federation was started. One adult school was opened. In Vellakoil Centre 64 hamlets and 24 cheries were visited. Thirteen soak pits and 20 latrines were put up. Sixteen cheries were cleaned and five mass sanitation drives were conducted.

Tanjore.—Thirty-five new charkas were introduced, 24 hanks of yarn were produced, 63 manure pits and 50 compost pits were dug, 32 cheries and 23 insanitary pits were cleaned; 18 mass meetings were conducted. Congregational spinning was conducted 32 times.

Chittoor.—During the month seven sanitary drives, ten magic lantern shows, and ten spinning demonstrations were conducted. In ten villages leprosy survey work was done.

North Arcot.—During the month 13 charkas were introduced under the Extensive Khadi Scheme and four hundred and one hanks of khadi yarn were spun by self-spinners. Demonstrations in soap-making, chalk-making, candle-making, etc., were held by the Rural Welfare staff. Ten gross of candles were produced by the weavers who were thrown out of employment for want of yarn.

Ten ryots agreed to part with their lands to an extent of 2·04 acres free of cost for the formation of a road from Chittoor to Cuddal[illegible] Maruthuvambady village under the [illegible] Post-war Road Development Scheme. Seventeen public meetings were conducted by the Rural Welfare staff and propaganda was carried on the potentialities of the Rural Welfare Scheme. One battery radio set was installed at Mangalam village. Arrangements were made for starting poultry units in ten villages.

South Kanara.—In Kumbla firka one acre of waste land was terraced. A co-operative society was organised for Maire village. In Manjeshwar firka, an adult school was opened. In Mulki firka one adult school was opened and a culvert was constructed. In Nileshwar area, 19 compost pits were dug by the ryots in the area. Five acres of land were brought under cultivation of sweet potatoes, tapioca, blackgram and horsegram.

A sanitation drive was conducted in the Harijan colony at Nileshwar. A quantity of 130 lb. of *Kolinji* seeds (green manure) was distributed to the ryots for raising green manure crops in their fields now lying vacant after the first.

Salem.—During the month five new charkas were introduced and 1,670 hanks of yarn were produced. An amount of Rs. 3,260 was distributed as loan to the ryots of Anayampatti village for raising cotton crops in the 100 acres block. Ninety-eight manure and rubbish heaps were removed, 3 soak pits were dug, 14 cheries were cleaned, 28 compost pits were dug and 41 manure pits were opened. Harijan Day was celebrated.

Malabar.—In Tellicherry firka, 33 compost pits were constructed and two ryots were supplied with green manure seeds. A new adult education class at Kolari and reading rooms at Mangattidam and Koodali were started during the month. Nine charkas were introduced under the Extensive Khadi Scheme.

In Payyanur area, 16 compost pits were constructed; 380 lb. of green manure seeds and 1,440 lb. of chemical manure were issued to ryots. Fifteen services were performed by the breeding bulls, buffalo-bull and the bucks stationed in the area.

Anantapur.—Eight medical chests were distributed to the various Grama Seva Sanghams; six charkas were distributed under the Extensive Khadi Scheme and 22 compost pits have been got dug and partly filled up. A mass sanitation drive was conducted at Seegipalli on November 20, 1951, and the entire village was cleaned and swept; 1,000 trees were planted in the Model farm at Melavoy. A group tournament was conducted at Bullasamudram and prizes were awarded on November 9, 1951, for adults as well as children.

Nilgiris.—A sum of Rs. 852 was disbursed as agricultural loan to two ryots for the purchase of seeds and manure; 201½ lb. of insecticides were supplied to the ryots from the Ootacamund Agricultural Depot. During the month 32 compost pits were dug and filled up in all over the firka. Proper preservation of cattle manure was demonstrated. Four manure pits were newly dug and old pits were renovated during the month. An amount of Rs. 488 was paid to 59 ryots as the subsidy for compost making.

A night school was opened at Kariamalai hamlet. Arrangements for the supply of electricity to Bikkatti village were made. Supply of electricity to Naduvattam Panchayat was under investigation. The maternity centres in the firka treated 28 maternity cases and 1,000 out-patients. The Khadi Co-operative Society at Balacola and the Kathi Mandal at Nanjanad spun 176 hanks of yarn.

A Toda Cattle Show was held during the month at the seventh mile on the Ootacamund-Mysore Road. Prizes were distributed to the best exhibitors. The show was filmed by the Ministry of Information and Broadcasting, Government of India. A spinning demonstration was conducted by the members of the Nanjanad Kathi Mandal on the occasion.

Krishna.—One earthen road (1 mile 6 furlongs) was formed from East Madhavaram village of Vissannapeta firka to the Masulipatnam-Tiruvur Road. The cost incurred for the road was Rs. 9,700 of which the villagers contributed one-third in the shape of labour

RURAL RECONSTRUCTION

Chingleput.—Fifty-one compost pits were dug at Tirur, Melakondayar, Pakkamcheri, Vemmanambudur, Ekkadu, Kesavanallur, Perambakkam, Thenkaranai, Adigathur, Koilampundi, Kaliyanur, Mappedu and Kilanur group. Seventeen manure pits were dug at Patraiperumbudur, Meppedu and Kilacheri group, 280 lb. of improved paddy seeds were sold to the ryots in the selected areas and loans up to Rs. 9 300 were given to the ryots. Thirty trees were planted at Ekkadu village. Five insanitary pits were closed. Twelve drainages were cleaned in Venmandambudur, and Siruvanur, Tirupachur and Patraiperumbudur. First aid was rendered to 51 persons.

Guntur.—In Ongole, during the month 23 individual and 17 mass sanitation drives were conducted. Six old soak pits were repaired. Seventy-three manure heaps were properly covered or rectified. Thirty-five compost pits were formed. Eight public gatherings were addressed on the Grow More Food campaign. One hundred seedlings were planted. Seventy-eight pairs of cart tyres, 19 axles and 13 crowbars were distributed to the ryots.

A survey on soil erosion was conducted in twenty-five acres of land and the ryots were advised to form contour bunds to prevent further erosion. Forty-three charkas were introduced. Sixty spindles were sold to the ryots. One hundred hanks of yarn was produced by self-spinners. Eight spinning demonstrations were conducted. Fifty-one yards of cloth was produced during the month. An amount of Rs. 81-3-4 was disbursed as subsidy to self-spinners.

Kurnool.—The Rural Welfare Officer, Kurnool, and the Grama Sevaks conducted mass and individual sanitation drives in the various villages of the firkas. They conducted 18 spinning demonstrations, dug 25 compost pits, set right 19 manure pits, cleaned 47 streets, dug seven soak pits and levelled up two insanitary pits. Four manure heaps were got removed outside the villages, five heaps of stone and filth were got removed from streets.

In Yerragondapalem circle 56 spinning demonstrations were conducted, 98 manure pits were set right, 29 compost pits were dug, streets were cleaned 69 times and two manure heaps were removed outside the village.

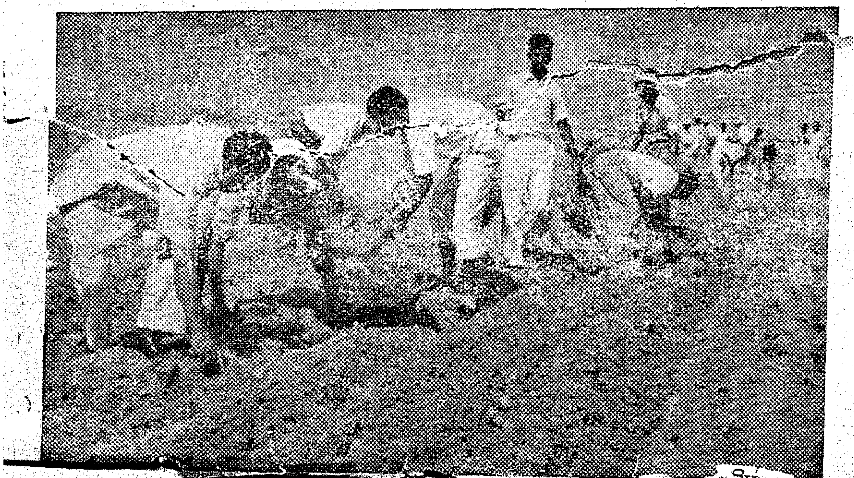
In Kurnool firka, quinine was distributed among the villagers suffering from malaria. Sixteen adult education classes were held. One magic lantern show and five bhajan parties were conducted. A sum of Rs. 900 was collected towards share capital for the Cottage Industries Federation and one sheep-rearers' co-operative society was organised in Konidala village. Three breeding (Murrah) buffalo-bulls were distributed, one in Brahmanakotkur and the other two in Gargeyapuram. Five hundred fish seed was distributed to the ryots owning wells in Nagatur.

Madurai.—Sanitary drives were made on an extensive scale in 30 cheries and 24 villages with the co-operation of the villagers. Masonry drains were constructed to a length of 486 feet and about 200 unhealthy pits were covered up. Village games were conducted in 28 places and a tournament in village games was conducted. Under the Khadi Scheme 45 new charkas were distributed and 8,511 hanks of yarn were spun by the spinners.

Ramanathapuram.—The manufacture of compost manure was encouraged among the villages and 175 compost and manure pits were dug during the month, and 146 trees were planted. A poultry farm was opened at Managaseri. As regards rural water-supply, new wells were sunk and old wells repaired, wherever necessary.

Visakhapatnam.—In Pendurthi firka, 50 sanitation drives, three magic lantern shows and 74 spinning demonstrations were conducted, 58 compost pits were dug and 52 ordinary pits set right.

Cuddapah.—Twenty-two charkas were introduced during the month, and 48 spinning demonstrations were held. Fifty-seven compost pits were dug in the villages and about 62 tons of compost manure was prepared. Fifty-seven sanitation drives and eight sanitation drives were conducted in the villages. Twenty-seven adult education classes were conducted by the Grama Sevaks in the villages.



LAND ARMY IN ACTION

Land Army units removing weeds in the Qamurudin Nagar area. Members of the Land Army seen here are students of the Indian Agricultural Research Institute, Delhi.

Rural Credit Societies

The Cherlopalli Multipurpose Co-operative Society

One of the earliest societies that was organised after the introduction of the scheme of reorganisation of rural credit societies is the Cherlopalli Co-operative Society in Rajampet Taluk (Cuddapah District). It was registered on 21st April 1940 and started on its work on 21st May 1940. On 30th June 1951 there were 165 members with a paid-up share capital of Rs. 1,462. During 1950–51 it borrowed a sum of Rs. 5,980 under short-term loans and a sum of Rs. 6,500 under medium-term loans from the Cuddapah District Co-operative Central Bank and disbursed them to the members. It changed its name to multipurpose rural credit society. In consonance with the name, the Society undertook a variety of multipurpose activities. It dealt in foodgrains, cloth, fertilisers, agricultural implements, kerosene, bengal gram, etc. During 1950–51 the purchases amounted to Rs. 12,211 and the sales amounted to Rs. 13,516.

A community centre was also completed by the Society. The estimated cost of the building was Rs. 5,800. The Government were pleased to sanction a subsidy of Rs. 2,900 to the Society for the purpose. The construction is over. This subsidy of Rs. 2,900 sanctioned by the Government, has already been drawn and disbursed. There is a library in the building. During nights, an adult education school is conducted on the first floor of the building. About 15 to 20 students attend the class daily. The Society's office, is, of course, located in the building.

One of the methods suggested by the Registrar to help the Grow More Food campaign is to issue loans to the ryot members of the societies for the purchase of pumpsets repayable in five years. The Cuddapah District Co-operative Central Bank has taken up the suggestion and has been issuing loans to the multipurpose rural credit societies under the scheme. The Cherlopalli Multipurpose Co-operative Society took advantage of the scheme and has disbursed loans under the scheme to two members to the extent of Rs. 6,500. Both the members have purchased pumpsets.

The Society has been inculcating the thrift habit among members. It has distributed hundi boxes to the members and during 1950–51 a sum of Rs. 128 was collected through hundi boxes. It earned a net profit of Rs. 227 during 1950–51.

The Pilicode Multipurpose Rural Credit Society

The Pilicode Multipurpose Rural Credit Society, Post Pilicode, in the Kasaragod Taluk, is one of the good working societies in the Kasaragod taluk. This Society was registered in a coastal village, and was started on 20th May 1949 with 46 members and a share capital of Rs. 440. Now the membership and the paid-up share capital have increased to 107 and Rs. 1,781 respectively. The Society serves a third of the population.

The Society meets all the credit requirements of the members. During the year 1950–51 the Society is[illegible] 111 loans amounting to Rs. 11,620 and recovered Rs. 5,624. An amount of Rs. 10,694 is now outstanding as loans. A good feature of this Society is that there are no overdues from members.

The Society has admitted 12 Harijans as members, and it is issuing small loans to them for various useful purposes. The society borrowed Rs. 11,590 from the Central Co-operative Bank in the year 1950–51 and repaid Rs. 4,598. A sum of Rs. 11,992 is outstanding to the bank at present.

On 17th February the Society was converted into a multipurpose society, catering to the needs of its members including the social and recreational needs of the villagers. An ameliorative committee was set up with five members to look to these activities. Under its auspices a reading room has been started and this has become a centre where the villagers flock in the evenings to read the daily newspapers and discuss the problems of the day. Leading newspapers are subscribed for and these newspapers are widely read in the reading room. The Committee members collected a donation of Rs. 216–9–0 for this purpose and an amount of Rs. 208–8–0 has been spent.

A noteworthy feature of this Society is that it is encouraging the local agriculturists to grow more food and to use more of chemical fertilisers. It purchased Rs. 395–1–2 worth of ammonium sulphate and distributed it to the ryots during the cultivation season. Besides, the members have dug 12 compost pits for preparing compost manure.

The Panchayatdars of the Society are considering the joint purchase of improved agricultural implements for supply to their agriculturists members. The Panchayatdars are working hard for the benefit of their members and others and are doing a real service in the village.

The Hadagalli Society

The Hadagalli Basava Rajendra Multipurpose Co-operative Rural Credit Society, Hadagalli Post, Hadagalli Taluk, Bellary District, was registered on 24th May 1945 and this is the sixth year of its working. There are now 390 members with a paid-up share capital of Rs. 8,115. The Society has built up a Reserve Fund of Rs. 1,095–3–0. It has invested Rs. 2,950 in the shares of the Central Bank [illegible] Hadagalli Marketing Co-operative and Rs. 250 in the Hirehadagali [illegible] Rs. 110 in National Society. It has deposited a sum of [illegible] Savings Certificates.

The maximum credit limit is Rs. 1,00,000. The Society [illegible] borrowed Rs. 13,743 from the Hospet Co-operative Central Bank, Limited, Hospet, during the year and now owes Rs. 13,743. The amount of loans outstanding against the members is Rs. 51,888. In addition to credit transactions, the Society has undertaken various multipurpose activities. It is dealing in iron and steel, etc. The volume of business transacted is given below:

Agricultural implements including cart tyre [illegible]

The Society has also [illegible] the members [illegible]

Sri Venugopala Multipurpose Co-operative Credit Society

Sri Venugopala Multipurpose Co-operative Credit Society, Bhatlapenumarru, Divi Taluk, Machilipatam Circle, was registered on 13th November 1919 and started on its work on 17th December 1919 with 35 members and a share capital of Rs. 955. The area operations of the Society extends to Vurtur and Iyyannapudi villages besides Bhatlapenumarru. The population of these villages included in the area of operation of the Society is 7,600.

The Society got its bylaws amended converting it into a multipurpose credit society on 26th January 1951. There are at present 398 members with a paid-up share capital of Rs. 14,168. The maximum credit limit of the Society is Rs. 1,25,000 and the individual credit limit is Rs. 2,000. The Society has invested a Reserve Fund of Rs. 8,750. It has yet to invest a sum of Rs. 680–4–0. It has taken shares of Rs. 3,500 in the Krishna Co-operative Central Bank, Limited, and of Rs. 100 in the Krishna District Co-operative Central Stores. A sum of Rs. 63,698–6–0 was outstanding under loans to the Krishna Co-operative Central Bank on 31st October 1951 of which Rs. 14,584 was overdue. A sum of Rs. 88,877 was outstanding against members up to the end of 31st October 1951, of which Rs. 16,483 was overdue.

The Society opened home safe deposits since 1949 and a sum of Rs. 114 was collected by the end of June 1951. This amount was converted as fixed deposits; Rs. 65 was collected as home safe deposits from 1st July 1951 to 31st October 1951. The Society received Rs. 1,805 from members and Rs. 11,295 from non-members as fixed deposits. The profit earned by the Society during the year 1949–50 was Rs. 1,511.

The Society obtained a licence for dealing in chemical manures on 20th July 1951, but did not conduct business in this season. The Society did business in mill cloth and earned a profit of Rs. 630 for the year 1948. Subsequently there were no profits in this regard. The Society was recently permitted to deal in sugar.

The Society is a regular subscriber for the journal *Sahakaram* which is published in Telugu by the Andhra Provincial Co-operative Union, Rajahmundry.

Sri Ranganatha Vilas Co-operative Multipurpose Rural Credit Society

Thirubhuvanam is one of the villages in the Saliamangalam firka (Papanasam Taluk, Tanjore District), which is selected for intensive rural work by the Government. The village has got a population of 1,285 and lies half a mile of Saliyamangalam.

... was registered in this village on 10th ... work on 1st January

admit members and a campaign was started which resulted in considerable increase in membership. Today there are 114 members in the Society with a paid-up share capital of Rs. 2,039 by which 44·7 per cent of the population of the village have been brought under the fold of Co-operation.

The maximum borrowing power of the Society has been fixed as Rs. 8,000, while the maximum limit of borrowing of a member is Rs. 500. The Society has advanced loans to 57 members to an extent of Rs. 6,769 on 30th June 1951 for purchase of plough bulls, reclamation of land, discharge of prior debts and for capitalising the business of petty shopkeepers. The Society has to pay to the Central Bank a sum of Rs. 6,248 and no amount is overdue from the Society as on 30th June 1951. The Society has invested Rs. 120 in the shares of the Central Bank and Rs. 86–15–0 has been invested under Reserve Fund.

The Society has jointly purchased manure for Rs. 1,030–10–0 and distributed this among members to increase food production. To encourage the habit of thrift among members hundi boxes have been distributed to some of the members. First aid is made available to the rural folk of the village by providing a medicine chest. Thus the Society plays an important part in non-credit activities also and caters to the need of the village.

Jaggery Co-operative in Palghat

In the Palghat Taluk in the Malabar District a scheme of marketing of palm jaggery produced by the members of palm jaggery manufacturing co-operative societies through the Palghat Sale Society was introduced in 1950. Under this scheme, 25 palm jaggery manufacturing co-operative societies in the area have joined the Sale Society as members. The Sale Society rented three godowns at important market centres and rail heads viz., Palghat, Parli and Vadavannur.

The palm jaggery manufacturing co-operative societies in the area transported their produce to the depots to which they were attached. In the depots auction sales were conducted on all the days in the week except Sundays and public holidays in the presence of the representatives of the respective jaggery manufacturing Co-operative societies. The Sale Society charges a commission of 3 pies per rupee on the sale proceeds and pays the balance to the palm jaggery societies concerned

During the palmyra season for 1950–51, the Sale Society marketed palm jaggery to the extent of 1,15,120 maunds of palm jaggery to the value of Rs. 7,46,947. By this system of sale, the ordinary variety of palm jaggery was sold at an average price of Rs. 6–8–0 per maund, whereas it fetched only Rs. 4–14–0 per maund prior to the introduction of this system. The superior varieties of palm jaggery were sold at an average price of Rs. 8–1–0 per maund. The Society earned a commission of Rs. 11,218.

The system of sale has assured a steady market for the jaggery produced by the members of the palm jaggery manufacturing co-operative societies who are now in a position to devote their attention to the production side of the industry and increase their output. Above all, certain middlemen who were exploiting the ex-toddy tappers and who were knocking away the cream of the trade, ... eliminated.

Science Helps to Turn Wheels of Industry

By Dr. S. S. BHATNAGAR, F.R.S. and Dr. S. D. MAHANT

The chain of National Laboratories stretching so far, from Mysore to New Delhi and Calcutta to Poona, is progressively gearing science to the solution of problems bearing on various facets of Indian economy. Seven of these institutes have been formally opened, while four remain to be opened, and though no great inventions can be claimed, ' the steady and silent work done by hundreds of young men and women ' has, as the Prime Minister recently put it, ' solved many problems and laid the basis of real research.'

Disinfectant from Tobacco Waste

Tobacco and oil-seeds constitute two of the economic crops of India ; and work carried out at the National Chemical Laboratory, Poona, has resulted in the evolution of processes which should have an important bearing on the utilisation of these industrial raw materials. The grading, manufacture and preparation for export of 684·4 million lb. of the Indian tobacco crop produces over 100 million lb. of mid-ribs, stalks, dust and scrap. In the Guntur District alone, this waste is estimated at five million pounds. Some of this scrap is used in the manufacture of snuff, but considerable quantities, which are more or less considered waste, await economic utilisation. Nicotine, which is an effective insecticide, could be extracted from this waste, but the industry is non-existent in India, and foreign countries have felt that due to the low nicotine content of Indian tobacco scrap (two per cent or less) it is uneconomic to process it.

The National Chemical Laboratory has now worked out a simple method of extraction of nicotine, by which it will be possible to process Indian scrap and produce nicotine for use as an insecticide within the country and also for export on an economic basis.

Tobacco Seed Oil in Varnish

Tobacco seed is another by-product which has been more or less neglected so far, so much so that a couple of years ago tobacco seed oil, which is used industrially in foreign countries and considered e[illegible]e in some, could not be obtained in India. A process for treating this oil for use in paint and varnish manufacture has now been patented and is available for commercial adoption by industry. Incidentally, this work has stimulated interest in the expulsion of tobacco seed oil, and the oil crushed is now finding an export market.

Vegetable Oils in Soap Manufacture

Other oil-seeds which have received attention are neem, kamla, safflower, pisa, khakan and phulwari. It has been shown that pisa, khakan and phulwari can replace coconut oil in soap manufacture, thereby releasing more oil for edible purposes. Methods of eliminating the objectionable odour and taste of neem oil have been worked out, and the refined oil can be hydrogenated to provide a source of high quality stearic acid for use in soap manufacture.

Kamla oil is of particular interest because of the possibilities that it presents of replacing tung (china wood) oil, which is in short supply. Varnishes and paints based on kamla oil yield air-drying wrinkle finishes, which hitherto could be obtained only by baking films of alkyd varnishes. This discovery permits production of beautiful finishes on doors, walls, heavy pieces of furniture, fabrics, paper and other materials which cannot ordinarily be subjected to baking.

A new method for extraction of oils from oil-seeds through an aqueous medium has also been worked out. The yield of oil extracted is higher than that obtained by expellers or hydraulic presses.

Fertilisers

Conditions for the production of dicalcium phosphate and kotka type of phosphatic fertilisers, which are not at present produced in India, have been investigated and pilot plant experiments are being conducted at the National Chemical Laboratory. These aim at determining conditions for commercial manufacture. Preparation of ammonium sulphate from magnesium sulphate is also being studied. Large-scale production of these fertilisers and their use in agricultural operations will assist in the campaign for self-sufficiency in foodgrains and commercial crops.

New Foods

A search for new foods is in progress at the Central Food Technological Research Institute, Mysore. Milks and curds from groundnuts, identical in appearance and taste with cow's milk, have been prepared on a large scale. Their production cost is half that of cow's milk, and school feeding experiments on an extensive scale have demonstrated that these are nutritively as good as the natural product.

Considerable progress has also been made in the production of fortified grains and flours from tapioca and groundnut. These materials are meant to supplement, not supplant, the grain diet and are expected to assist partially in making good the food deficit of the country. Processing of coarse grains to make them acceptable to rice eaters, processing of *amaranthus paniculatus* (Rajgira), salt preservation of mangoes for export, passion fruit products and cu[illegible]d vegetables are some of the other lines of investigation engaging attention at the Institute.

Salt Cake in Glass Manufacture

One of the by-products of sa[illegible]facture in the Rajasthan area, and particularly at Didwan[illegible], is salt cake. This material, which is available in abundance, has so far only found limited uses. Recent work at the [illegible] Glass and Ceramics Research Institute, Calcutta, has established that it is possible to use salt cake to replace a part of the imported soda ash in the manufacture of amber glass. The possibility of extending the practice to ordinary glass manufacture is under investigation. Adoption of this practice will result in an appreciable reduction in the import of soda ash and also of sulphur, which is in short supply, required for the manufacture of amber glass.

Practical investigations conducted at the Model Salt Farm at Wadala, near Bombay, have demonstrated the

possibilities of producing common salt of a purity of 98 per cent and over by simple technical control and a change in the layout of the salt farm. It is simultaneously possible to obtain greater yields of salt with a consequent reduction in cost.

Search for Sulphur

The search for sulphur and sulphur-bearing ores has been intensified and the Geological Survey of India and the Indian Bureau of Mines are engaged in investigating known pyritic deposits at Taradevi (Simla), Amjor (Bihar), Ingladahl (Mysore) and Wynaad (Nilgiris). New deposits of pyrites have been located at Karwar. Native sulphur has also been found in the mountainous areas of Northern India, access to which is difficult. The most economic means of bringing this sulphur to industrial areas are being considered, and if necessary an air lift may be arranged.

Meanwhile, the Fuel Research Institute, Jealgora (Bihar), has shown that pyrites can be separated from some coals. A study of the washing of Nowrazabad (Rewa) coals has revealed that the " rejects " contain a high percentage of pyrites, and attempts are being made to determine an economic method for separating pyrites from " rejects." A rough estimate places the recovery at two tons of pyrites (about one ton of sulphur) per 100 tons of coal, and by establishing a coal washery with capacity of 150 tons per hour it should be possible to obtain nearly 9,000 tons of sulphur per annum. Considering that India's normal requirements of sulphur are of the order of 50,000 to 70,000 tons per annum, this source would meet one-eighth to one-sixth of the need. The practical application of this work in the near future should contribute substantially towards providing a dependable indigenous source to meet the country's sulphur requirements.

Coal

Based on the studies of coal washing at the Fuel Research Institute, two coal washing plants, with capacities of 150 and 300 tons, have now been established and come into operation at West Bokaro and Jamadoba (Jharia). These will assist in conserving India's metallurgical coals and enable low-grade coals to be used in the manufacture of iron and steel.

Low-grade high ash coals of the Bermo seam are to be utilised as pulverised fuel in the Bokaro 200,000 K.W. thermal power station of the Damodar Valley Corporation. At the same time, a proportion of the coal will be recovered for coking. This is another application of coal washing, and will provide a practical demonstration of the economic way of utilising research development.

By adopting suggestions made by the Fuel Research Institute in the controlled supply of secondary air into loco-boilers, the Nizams' Railway (now part of the Central Railway) has shown that not only can coking coals be replaced by high-moisture locomotive non-coking coal but that the coal consumption can at the same time be reduced by about 20 per cent.

Preliminary tests with Jammu coals have shown that though these coals are friable and difficult to handle, it is possible to make " briquettes " from them without any binder. The importance of the method can be easily realised when the distance of the State from the Bihar coal-fields is taken into consideration.

Coloured Glasses for Railways

For the indigenous manufacture of red, blue and yellow signal glasses required by Indian Railways, the Central Glass and Ceramics Research Institute, Calcutta, has worked out various compositions. Samples prepared from these compositions have been examined by the Railways and pronounced satisfactory. Large-scale production is expected to be arranged soon.

Utilisation of Solar Energy

Sunshine is a commodity which, thanks to Nature's benevolence, is in plentiful supply in this country; and that too at no cost. The harnessing of this rich source of energy for practical purposes is receiving attention at the National Physical Laboratory, New Delhi. The subject is of world-wide interest, and the two important aspects involved are concentration and storage of the energy received from the sun at a particular spot.

Solar energy can be used for generating power by the use of a heat engine, or through a thermo-electric generator. It can be used as heat for air conditioning, refrigeration and similar purposes. In the National Physical Laboratory, an air engine is now working on sunshine and air alone. Appliances to use solar energy for cooking food and heating water are also being devised.

Anti-Smuggling Devices

Another subject of practical interest is the evolution of portable anti-smuggling devices, consisting of a concealed cell connected to an electronic circuit which flashes a warning light as soon as a metallic object in the bag or on the person of a passenger comes within range. They thereby assist in the quick screening of potential smugglers from other passengers. Location of the metallic object then becomes a matter of routine. Another instrument, which looks like a hand mirror, is used for detailed scanning of passengers or their luggage. These devices are expected to be of particular assistance to customs officials in laying hands on smuggled gold or other precious metals.

Opium Detection

International smugglers are interested in opium. One of the problems facing excise authorities in various parts of the world is identification of the source from which the illicit opium has been obtained. In collaboration with international organisations and the Revenue authorities who supply various samples, the National Physical Laboratory is taking up a study of the structure of different varieties of opium with the aid of the electron microscope. Should this study reveal any structural differences in opium obtained from various countries, it will provide a ready method of indentifying the source from which the contraband has come. Preventive steps can then be considered by the authorities.

These are just some of the instances in which Physics is being put to practical use. Without touching on the abstruse studies in electronics, ultrasonics, nuclear energy levels, vibration of crystals and flame temperature which are engaging attention at the National Physical Laboratory, mention may be made of the series of investigations on Cosmic rays under the aegis of the Tata Institute of Fundamental Research and the Atomic Energy Commission (India) and ionospheric investigations.

(Continued on page 36.)

Employees' State Insurance Scheme

By Dr. C. L. KATIAL, Director-General, Employees' State Insurance Corporation

The first of its kind in South-East Asia, the Indian Employees' State Insurance Scheme, one of India's major social security legislations, was introduced on January 27, 1952, to synchronise with the beginning of the third year of the Republic of India. The Scheme is designed to cover 2,500,000 workers in all perennial factories, though it is being introduced, in the first instance, in Delhi and Kanpur to cover 150,000 employees.

Employees will get sickness, maternity, disablement and dependent's benefits and free medical care under the Scheme. The sickness benefit is payable for seven days a week at the rate of half the average daily wage, and the weekly benefit thus comes nearly to 7/12ths of the earnings of the workers. The benefit is payable up to 56 days in any continuous period of 365 days. The maternity benefit is payable at the rate of 12 annas per day or the sickness benefit rate, whichever is higher. It is paid for every day of the week for a period of twelve weeks of which not more than six can precede the confinement.

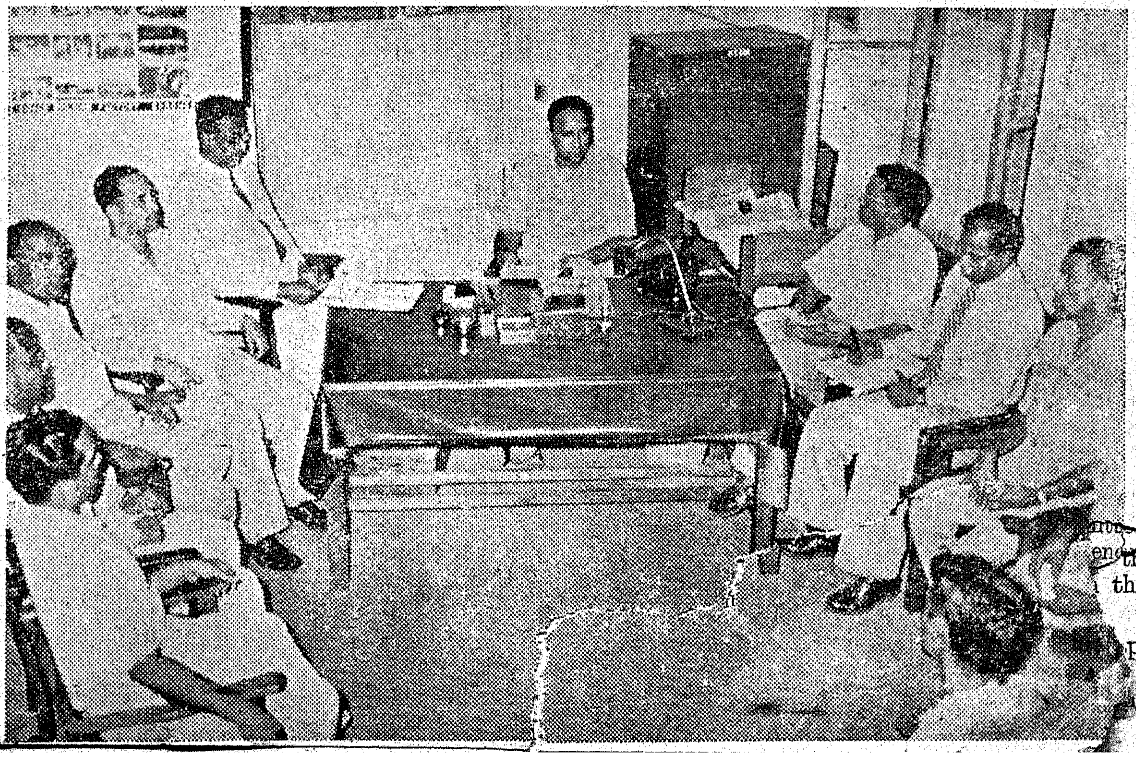
Persons disabled on account of employment injury will be paid benefit in the form of pensions and the dependants of a deceased employee will also similarly be paid benefits in the form of pensions. The pension to a permanently disabled worker is to be at the rate of about 7/12ths of the weekly earnings of a worker. Under the Workmen's Compensation Act, 1923, the benefits payable to permanently disabled workmen and to dependants of a deceased workman were in the form of lump sums. This was not satisfactory, as the lump sum was frittered away and did not prevent workmen from falling in want again.

Implementing the Act

The Employees' State Insurance Act was placed on the Statute Book in April 1948. Amended in September 1951, the Act was made applicable to all employees in perennial factories employing 20 or more persons and using power. Employees whose remuneration exceeds Rs. 400 a month are not covered by the Act. To work the new Act, the Government has set up the Employees' State Insurance Corporation which consists of representatives of the Central Government, State Governments, employers, employees, the medical profession and the Central Legislature. The executive work is done by a Standing Committee. A Medical Benefit Council advises on the medical aspects of the Scheme.

For its finances the Corporation is dependant upon contributions by the employees and employers. Workers who receive up to Re. 1 per day are exempt from making any contributions. Workers—in the areas where the Benefit Scheme is operating—who receive between Re. 1 and Rs. 1-8-0 a day contribute 2 annas per week. The higher wage groups contribute 4 annas to Re. 1-4-0 per week—a little over two per cent of their wages. The employers in Kanpur and Delhi, the industrial areas in which the Scheme is being introduced immediately, will contribute one and a quarter per cent of their total wage bill, employers elsewhere in India contributing three-fourths per cent of their total wage bill for financing the Corporation.

In all a sum of Rs. 2 crores is expected to be collected every year as contribution from employers and employees. The health services will be run by State Governments who



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will bear one-third of the cost of medical care, the remaining two-thirds being borne by the Corporation. The Central Government will share in the Scheme by meeting two-thirds of the cost of administration, excluding cost of benefits, for the first five years.

During the initial phase the Scheme is being put into operation in Delhi where it will benefit 55,000 workers in about 400 factories and Kanpur with about 96,000 workers in 250 factories. Eleven local offices have been set up in Kanpur and five in Delhi for operating the Scheme. Ten dispensaries including one mobile dispensary have been established in Delhi and 13 dispensaries in Kanpur. Subsequently, the Scheme will be extended progressively to cover other regions. Punjab is the next area on the schedule and the Scheme will start working in 11 industrial centres in that State in August 1952.

Greater Bombay and Bangalore will be brought under the Scheme in January 1953 and Madras, Calcutta, Nagpur and Jubbulpore will follow in July 1953. By October 1953, the industrial areas of Ahmedabad, Sholapur, Agra, Coimbatore, Asansol and Burnpur will get the benefit of the Scheme. All other places where the number of industrial workers is 5,000 or above will be covered in January 1954 and in July 1954, workers in smaller centres where the number is below 5,000 will also start getting the benefit of the Scheme.

The Indian Scheme shows interesting differences when compared with the National Insurance Scheme now in operation in Great Britain. While under the British Scheme contributions and benefits are paid at a flat rate, they have been graded in the Indian Scheme. The British Scheme today embraces every citizen, but it took nearly four decades—from 1911 to 1948—to grow to the present dimensions of its service. The Indian Scheme is expected to cover 25 lakhs workers in about four to five years and this social security legislation has invested the Government with authority to extend the Scheme to all categories of employees in due course.

REVIEW

WOMEN'S WELFARE JOURNAL
(ANNUAL NUMBER)

Pages: 108] [*Price Annas Eight.*

The Annual Number of the *Women's Welfare Journal* is a bumper publication with an impressive array of contributors, eminent in many fields of particular interest to women. The articles in the main stress domestic and social values, co-ordinating points for a general thesis that with women playing their assigned roles, home and world affairs can be tackled in the right spirit.

Subjects like mother care, child training, women and world peace, social service, adult education, rural colleges and the Hindu Code Bill find a prominent place in the Annual Number, dealt ably by specialists. Alongside, the regular features like Children's Corner, Cookery, Need[illegible] Departmental Corner and the short story, [illegible] the issue.

a[illegible] of pictures, many on art plates, and [illegible] Kannada, and Hindi supplements, serves [illegible]is issue popular in almost every household. [illegible]fical publication of special numbers will [illegible]lfill the avowed aim of the Women's Welfare [illegible] of advancing the social conditions of [illegible]folk[illegible]

Science Helps to Turn Wheels of Industry

(*Continued from page* 34.)

The Cosmic ray experiments are of interest because of the balloon flights by which observations are taken. Thirty to 60 hydrogen-filled balloons carry a gondola which houses a cosmic ray telescope, pressure and temperature measuring instruments and a specially designed wireless transmitter, which continuously relays scientific data. This relay is picked up by ground receivers and a permanent record is obtained. Measurement of various components of Cosmic rays at different altitudes and latitudes is likely to lead to a proper understanding of the nature of matter and elucidation of the mechanism of the origin of these particles in the cosmos. The energy with which these particles approach the earth is of such a high order that it is not possible to reproduce the same with the most powerful cyclotrons or atom smashers known. While the subject is of a fundamental nature at the moment, its practical interest lies in the training it imparts to personnel who are likely to be useful when utilisation of atomic energy becomes a practical proposition.

Ionospheric Investigations

Ionospheric investigations are being conducted at the Wireless Laboratory of Calcutta University and the data are published and exchanged with other international organisations as part of a world programme of ionospheric studies. This involves a routine hourly observation of the height of different layers of the ionosphere, their thickness and ionisation densities. The results are of interest in radio communication, television and aeronautical navigation.

Research Development

For research to play the important role assigned to it in national development, it is necessary that the results of laboratory investigations should be quickly and effectively translated into actual production. This is a subject that is naturally receiving much attention and proposals for the establishment of a National Research Development Corporation of India on the lines of similar specialised organisations in the United Kingdom and Canada are now under the consideration of Government. A primary function of this Corporation would be to demonstrate how processes can be operated on a full production basis. The early establishment of the Corporation should go a long way towards avoiding the risk that valuable researches may be left high and dry in the laboratories.

Radio Sets for Villages

The State Broadcasting Department have installed seven community listening sets in the course of the week ending December 6, 1951, bringing the total number of radio sets so far installed to 1,730. The villages are located in North Arcot, Salem, Tanjore, Malabar, Ramanathapuram, Nellore and Madurai districts.

Correction

The photographic reproduction of a portrait study in oils, published on the first art inset page of *Madras Information* (issue of January 1952), has been erroneously described as "one of the Mughal Paintings in the Art Gallery." The portrait is the work of the well-known painter Raja Ravi Varma [illegible]

Towards Better National Health

India's emergence as a Welfare State after two centuries of foreign rule threw the very heavy responsiblity of building a healthy nation on the National Government. Primarily this responsibility rested with the Health Administration of the country, the Ministry of Health, Government of India, and the Ministries in charge of this field of activities in the States. But the health of the nation is a problem with very wide ramifications as it is tied up with the levels of food consumption, the standards of sanitation obtaining in urban and rural areas, the housing situation, etc., etc. For example, tuberculosis, it will be clear to everybody, is tied up with the social factors of poverty, bad housing, etc. For improving housing conditions in India alone, we need between 5,000 to 10,000 crores of rupees and for improving nutrition we require between 200 to 300 crores of rupees annually.

The problem of national health, difficult from the very outset, was further complicated by the developments in the recent history of the nation. Lakhs of uprooted people from East and West Pakistan have been streaming into India ever since 1947. The country has had to face natural calamities of the severest kind like the Andhra cyclone, the Assam earthquake, etc.

War Against T.B.

Though beset with so many difficulties, the Health Administration has been carrying on an incessant war against the diseases which sap the health of the nation. A review of the measures taken against tuberculosis will give an idea of this particular type of nation-building activity.

Tuberculosis kills five lakhs of people every year in India and leaves another 25 lakhs as active cases. On account of this disease alone, India suffers a loss in terms of man-days of about 900 to 1,000 million days, accepting a very modest estimate of loss of one year per T.B. sufferer.

The total number of Government and private T.B. institutions in India today is :

Sanatoria	49
T.B. hospitals	35
Clinics	110
T.B. wards	114

The total number of beds for the isolation and treatment of T.B. patients is 10,371. During the last three years there has been an increase of 1,000 beds per year. A sum of about Rs. 7 lakhs during 1949–50 and Rs. 5·5 lakhs during 1950–51 were given as grants to various T.B. institutions in India by the Central Government. In addition to this, a sum of Rs. 5 lakhs and Rs. 8·8 lakhs during 1949–50 and 1950–51 respectively were given as grants to various bodies for the treatment of displaced T.B. patients from the Rehabilitation Ministry's allotment for the purpose.

To fight this terrible disease, the Government of India has launched the B.C.G. Vaccination Programme. The vaccine is manufactured at the B.C.G. Vaccine Laboratory at Guindy under the supervision of an expert who received training in Copenhagen, and it conforms to the standards laid down by the W.H.O. Expert Committee on Biological Standardisation. In the B.C.G. campaign, the Central Government's share of the cost consists of expenses on account of the Guindy Laboratory, the Central B.C.G. Organization including propaganda and subsistence allowances to foreign personnel.

Control and Manufacture of Drugs

Without an adequate supply of medicines of the right quality, the health services cannot function properly. The Government has taken steps in three directions in this respect : ensuring that medicines are actually up to the declared standards ; liberalisation of imports and encouraging the indigenous manufacture of drugs.

The Drugs Act of 1940 was brought into operation in April 1947. The necessary machinery for drug control which has been provided in the Act has been brought into being in the Centre and in the States and action is being taken against misbranded and substandard drugs. Samples of drugs which are imported into India are checked in the Central Drugs Laboratory. Under the guidance of the Central Government, all the Part A States have now adopted uniform rules under the Drugs Act and in the very near future Part B States are also expected to adopt these rules.

To make more quantities of drugs available to the public, the import of penicillin, insulin, sulpha drugs, arsenicals, etc., was liberalised by the grant of free licences in May 1950. In August 1950, imports of penicillin, chloromycetin and glucose medicinal were allowed from all countries and streptomycin from soft currency areas. The O.G.L. XXI of November 25, 1950, allowed the imports, besides the items mentioned above, of essential drugs like normal human plasma and vitamins from all countries and sulpha drugs, amino acids, X-ray diagnostic reagents, etc., from soft currency areas. The import duty on D.D.T. has been abolished so as not to hold up anti-malarial work in the various regions of India.

Penicillin and Sulpha

As for the actual production of drugs in the country, the Government of India is implementing a scheme for the production of penicillin and the Government of Bombay for the production of D.D.T. The Government of West Bengal and Madras who own cinchona plantations produce about 100,000 pounds of quinine. The country's annual requirement being 150,000 pounds, the Central Government is in consultation with these Governments on plans for increasing quinine production. The Haffkine Institute, Bombay, is manufacturing sulphathiazole on a commercial scale. It is equal to the best imported sulphathiazole. The Central Drugs Research Institute is carrying on, *interalia*, research work on certain medicinal plants used in Ayurvedic and Unani systems of medicine.

The Government of India has accepted in principle [illegible] main recommendation of the Pandit Committe[illegible] proposed Central Research Institute in Indigen[illegible] of medicine should be established in asso[illegible]rad Gulab Kunwarba Ayurvedic Insti[illegible] the [illegible] Details are being worked out [illegible] Saurashtra Govern[illegible] tural Research [illegible] cultivation o[illegible] and Darjeeli[illegible]

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India in the Classroom

Educating fifteen per cent of the world's population, after two centuries of a phase in their history which, for one reason or other, slowed up work in this field and nearly obliterated the memories of one of the finest cultural traditions the world ever saw, is not an easy job. But this is the task which Independent India has to undertake.

The problem, appalling in magnitude from the very outset, was further complicated by the fact that the new Republic has had to strain every nerve and divert every resource for productive activities to ensure sheer physical existence and survival. But educational work could not be suspended in any case, when the percentage of literacy, excluding children below five years, is estimated at 20 in a population of 362 millions. Reorientation of primary education, the social education of the adults, reintegration into society of the handicapped and the use of new media for mass education are some of the programmes adopted in this great task. Side by side with this, educational policy has also kept in mind the need for technical personnel required to step up the productive capacity of the land.

Basic Education

Inspired by Mahatma Gandhi's Scheme of Education, the Basic Education Plan adopts a practical and realistic [illegible]h and seeks to replace the traditional academic [illegible]h by craft-centred productive education more [illegible] to child psychology and social needs. The [illegible]e on Ways and Means for financing the educa[illegible]evelopment programme, presided over by Sri [illegible] Kher, Premier of Bombay, recommended that [illegible]niversal compulsory Basic education should be introduced within a period of 16 years by two five-year plans and one six-year plan. It also recommended that 70 per cent of the expenditure on education should be borne by the State Governments concerned and the remaining 30 per cent by the Centre. This recommendation was considered by the Central Advisory Board of Education in January 1949 and the Scheme as approved by the Board was accepted in principle by the Government of India.

This Scheme has been progressing satisfactorily in various States. In West Bengal, for example, 1,413 primary schools (with 6,098 teachers) providing instruction for 257,612 children have come under the Scheme at an estimated cost of Rs. 8,94,720. In Ajmer, in furtherance of the Scheme, 85 new Basic schools are being opened and 30 existing primary schools are being converted into Basic schools. This will bring the total number of junior Basic schools to 150 and that of converted schools to 60. The Government of Bombay have recently sanctioned the opening of 100 new schools in schoolless villages having a population of 700 and over in the merged States areas and propose to start from March 1952 three experimental Basic schools in the three linguistic areas, i.e., Maharashtra, Gujarat and Karnataka. To implement the Scheme, the Madhya Bharat Government have decided to start a Basic Training Centre at Manipur near Indore which is expected to train 75 trained teachers every year.

One of the functions of the Central Institute of Education, Delhi, opened by the Government of India in 1947, is to carry on research in Basic education. Recently, it prepared an omnibus scholastic attainment test for studying the scholastic achievements of the children in Basic and non-Basic schools in Bihar. It has also started an experimental Basic school to conduct experiments in Basic education in an urban setting, as hitherto Basic education in the various States has been confined almost entirely to the rural areas.

Social Education

The social education programme for adults aims not only at imparting literacy but also endeavours to raise their material and cultural standards and widen their interests and outlook. The pattern of the programme, on which various States are at present working, was evolved by a committee appointed for the purpose, accepted by the Central Advisory Board of Education in January 1949 and worked out in detail by a Conference of State Education Ministers in February 1949. The technique followed in Delhi is the introduction of educational campaigns in villages through "Caravans" and Educational Melas. Four motor truck vans, one carrying a library, another a complete theatre with footlighted stage and two others carrying exhibition and demonstration equipment, move into a village and carry on a short but intensive programme of sports, illustrated lectures and dramas. When the Caravan moves out, a squad of 15 to 20 teachers stay on and work in the villages for six weeks. For training village leaders, the Government of India opened the Janata College Centre at Alipur near Delhi in December 1950. The students are selected carefully from the villages on the basis of their qualities of leadership, which, after training, should enable them to return to their villages and carry on the programme there.

Among other States and areas which are actively implementing the Social Education Programme are Ajmer which has about 100 centres, and Madhya Pradesh which has an ambitious programme of social education and has organised training courses for the purpose in Amravati, Jubbulpore, Nagpur and Raipur and installed 544 radio sets in rural areas. In Bihar over 2,000 squads are operating in this field and Bombay has opened nearly 9,000 centres in 109 compact regions and set up nearly 4,000 libraries in the rural areas.

Audio-Visual Education

Though nobody theorised about it in the past, audio-visual media have been used in India from time immemorial to conserve and pass on the cultural heritage of the land. The sculptures which adorn many Indian temples are really narratives in stone. Stone calligraphy, worked in exquisite patterns, recite in unheard melodies many of the beautiful verses of the Quran in the mosques that were built in the land from the 12th Century onwards. Moghul paintings narrated tales of chivalry and of the pomp and circumstance of the Imperial Court, while Rajput painting carried on in exquisite line and colour the traditions of religion which found literary expression in the verses of Surdas and others.

Audio-visual education represents the adaptation and expansion of these media and adoption of new ones, based on modern technology, for the popularisation of culture

and knowledge. Since the cost of equipment often discourages schools of modest means from going in for audio-visual aids, the State has to lend a helping hand. The Central Films Library of the Ministry of Education, Government of India, has at present a stock of over 800 16 m.m. films and a 1,000 thirty-five m.m. film strips and is functioning as a lending library for about 330 institutions all over the country, the average circulation of films being about 400 per month. The Library has now been extended to include other aids like posters, charts, models, graphs, etc.

In October 1951 on the occasion of the visit of Professor T. L. Green—an expert on audio-visual education—sponsored by UNESCO, an All-India Conference of Audio-Visual Education was organised by the Central Ministry of Education. The Conference studied the whole problem of developing and popularising audio-visual aids and recommended to all the States the development of audio-visual education and establishment of educational museums through which audio-visual aids could be made available.

Educational Handicaps

Anthropological research has shown that the low intelligence of the savage is due more to the absence of stimulating contacts than to original mental inferiority. Geographically remote groups are not the only victims of such isolation. Even in the midst of modern society, groups can be isolated by poverty, social prejudices, physical and mental handicaps. The blind people of the world form one of the most tragic instances of this type of isolation. But the history of humanitarian work in this field has shown that they can become useful members of society. "For His servant who is lost and troubled" wrote our own blind Surdas, "He ranges far in loving search." But society has to do this search as a proxy of God.

According to the Census of India, 1931, population of the blind was estimated to be 601,370, a much higher figure in proportion to the total population than is the case with England or the U.S.A. On January 1, 1950, in implementation of the recommendations contained in the *Report on Blindness in India* of the Joint Committee of the Central Advisory Board of Education and Ministry of Health, the Government of India opened a Training Centre for Blind Adults at Dehra Dun. The Centre has residential accommodation for 120 trainees. Spinning, net-making, canework knitting, making blankets, cotton durries and jute and wool carpets are some of the trades taught in the Centre. The training as well as board and lodging are free. The trainees receive clothing free of charge and a specific sum every week as pocket allowance. After a trainee has attained a certain degree of efficiency he is paid for work produced. Elementary education is also provided for those who have had no academic education prior to their admission. Organised games are arranged for recreation and all trainees are given a chance to learn and appreciate music.

India has played an important part in the attempt to evolve a single Braille script for the blind of the world. It was at the suggestion made by the Government of India in 1949 that UNESCO undertook a study of the possibility of evolving such a uniform script. UNESCO has since convened three international conferences to examine this problem and a considerable measure of uniformity has been attained. Dr. Suniti Kumar Chatterjee, a member of the Indian Expert Braille Committee, was the Chairman of the UNESCO's Consultative Committee on Braille which met in Paris in December 1951 to advise the Director-General of the UNESCO on the formation of a World Braille Council.

Education for Production

With the far-reaching reconstruction programmes to be implemented in the next few years in order to raise the standard of living in the country, India will be needing an army of highly trained technical personnel. Three schemes recommended by the Scientific Manpower Committee are already under implementation by the Central Ministry of Education : Research Training Scholarships ; Practical Training Stipends and Grants to Universities and Research Institutions for development of research and post-graduate training facilities. The total expenditure on these schemes was Rs. 28,59,394 for 1949–50 and the figure for 1950–51 is Rs. 24,58,340. The All-India Council for Technical Education set up by the Central Government to advise on the development of higher technical education has appointed a Technical Manpower Committee to assess the needs of technical personnel during the next five years.

In the meantime, the Council has formed six All-India Boards for technical studies in the main branches of engineering and technology. The All-India Boards have formed courses in civil, mechanical and electrical engin[illegible]ing, metallurgy, commerce and business administ[illegible] architecture, regional town-planning, textile tec[illegible] applied art, chemical technology and chemical eng[illegible] The Indian Institute of Technology at Kharagpur, [illegible]shed at a cost of nearly 56 lakhs of rupees, has bee[illegible]tioning from August 1951. Grants-in-aid have been g[illegible] to institutions like the Indian Institute of Science, Bangalore ; the Department of Chemical Technology, Bombay University ; Dayalbagh Engineering College, Agra ; Botany Department, Madras University ; Department of Radio Physics and Electronics, Calcutta University ; the Victoria Jubilee Technical Institute, Bombay ; and the Engineering College, Annamalai University. The Indian School of Mines and Applied Geology, Dhanbad, has been reorganised, resulting in expansion of facilities for the training of mining engineers. A Directorate of Marine Engineering Training and a Residential Marine Engineering College have been established at Calcutta.

A Conference of Vice-Chancellors of Indian Universities and others interested in agricultural education was convened in New Delhi in November 1951 by the Ministry of Agriculture. It considered the problems of making the educated soil-minded and of improving the efficiency of agricultural workers. The Conference emphasised the need to reorient agricultural, veterinary and forest education and welcomed the formation of the land army.

Determined though the efforts have been in the task of re-educating India's millions, by the very nature of things they cannot be expected to yield results overnight. But the slow fruition of this programme will bring abiding benefits for the young generations that are growing into manhood today.

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